

JOURNAL

OF THE

United States Cavalry Association.

VOL. XVII.

JANUARY, 1907.

No. 63.

PORT ARTHUR.

BY SECOND LIEUTENANT HENRY J. REILLY, SECOND CAVALRY.*

FIRST a brief description will be given of the vicinity of Port Arthur. Running almost due north from the harbor of Port Arthur is the valley of the Lun Ho. The Lun Ho and its tributaries drain the major part of the Shuishih valley, a valley running in a general northwesterly and southeasterly direction, about three miles to the north of Port Arthur. On the shore of the harbor, to the east of the Lun Ho and separated from it by a hill, is the "Old (official) Town" of Port Arthur, while to the west of the Lun Ho is the "New (commercial) Town." Between two and two and a half miles from the Old Town is a continuous chain of hills running from the Lun Ho in a general form of a semi-circle to the Yellow Sea. The peaks of this chain run from

*Lieutenant Reilly had the good luck to visit Port Arthur in the fall of 1905. The article is entirely the result of his own observations. All drawings were made by him, and he took the photos given herewith. In his manuscript names were spelled after the Japanese pronunciation. This has been changed by the JOURNAL to the orthography adopted by the War Department. The article was prepared for the Second Division, General Staff, and is here reproduced by its courtesy.

something over 100 meters to slightly over 200 meters. Not quite three and a half miles northwest of the mouth of the Lun Ho, and about two and a half miles west of the river itself, is 203 Metre Hill. North of 203 Metre Hill there is a number of smaller hills and ridges extending for a distance of about two miles. This group faces about north-north-west. Running south from 203 Metre Hill to the Harbor there is a chain of smaller hills facing in general towards the west and interrupted about half way by a small valley running east and west. Just west of the Lun Ho, starting near the mouth, there is a group of hills which trends towards the northwest. Beyond the group containing 203 Metre Hill, which is the highest in the group, is a valley running south from Louisa Bay, and extending on the west to Pigeon Bay, and on the east, interrupted by a few hills, to the harbor. The peninsula between Louisa and Pigeon Bay is occupied by a number of low hills. The southern tip of the Kuantung Peninsula is occupied by a group of hills, the highest of which is 465 meters. The Tiger's Tail Peninsula, which forms the southeast side of the harbor, is joined to the mainland by a low narrow neck of land. The peninsula is occupied by a number of hills, the highest of which is 175 meters. The eastern side of the entrance to the harbor is formed by Golden Hill, 117 meters high. Just north of Golden Hill and between it and the old town is the navy yard and the basin.

At the point where the Lun Ho valley opens into the Shuishih valley, the latter spreads out in the form of a basin about three miles wide. To the west the basin narrows to a little over a mile, just north of the range containing 203 Metre Hill, and then spreads out again to the shores of Louisa Bay. To the east it runs off to the Yellow Sea in a semi-circle, in many places less than a mile across. North of the Shuishih valley there are various ranges of hills.

The railroad coming from the north enters the Shuishih valley at a point somewhat to the west of the center of the semi-circular line of hills to the north of Port Arthur, turns to the east, runs along near the foot of these hills, and

finally, running around their eastern flanks, enters the valley of the Lun Ho, by means of which it reaches Port Arthur.

Port Arthur consists mostly of brick buildings, in the Old Town fairly close together, but in the New Town widely scattered. The water supply came from a pumping station about a mile up the Lun Ho valley and also from some cisterns at the foot of the Sungshushan. This latter supply was cut off by the Japanese.

The hills are bare of timber, entirely uncultivated, and covered with a short grass. The soil is mostly laminated rock in the last stages of disintegration, and while in most cases it is quite soft and crumbles readily, it would be quite hard to work it by hand with pick and shovel. The hills as a rule are very steep. On most of them the angle of slope changes abruptly in two or three places, thus making a number of military crests between the top and bottom. Though the hills are arranged more or less in chains, a continuous ridge of any length is seldom found, the top of the chain generally terminating in a number of peaks whose summits are of small area. There are a great many ravines which towards the bottom of the hills become in many cases fairly wide and almost invariably have vertical sides. The Shuishih valley, which from the hills looks like a gently rolling plain, on closer examination is found to consist of considerable rises and depressions and to be cut up in many directions by deep ravines with fairly vertical sides. These ravines not only twist and wind in such a way that in most cases it would be impracticable to enfilade them for any distance, but are often entirely hidden by the shape of the ground from observation from the hills from the south. The soil is a rich brown loam, easy to dig in, and reaches to the foot of the hills. The whole valley is under cultivation, and during the fall months is covered with millet. There are Chinese villages scattered all over the valley; the houses are of mud and afford little if any protection from fire. Most of them were destroyed during the siege but have since been rebuilt. There are no forests or groves, nothing but small groups or isolated trees. These same remarks apply to the valley running south from Louisa Bay.

POSITIONS OF DEFENSES.

Only those positions that took part in the land defense will be described; as, with the exception of Golden Hill, permission to visit the coast defense positions was withheld. Starting at the east flank of the circular chain of hills north of Port Arthur the first fortification is the line of trenches and bomb proofs called the Sungshushan* Auxiliary. Next is the permanent Sungshushan Fort. On the next spur is the Erhlungshan Fort, a permanent work. The Sungshushan and Erhlungshan are connected by a line of trench, the old Chinese wall. From the Erhlungshan there is a line of breastwork and trench running up over the Hachimakiyama and Panlungshan to Wangtai; on top of each of these three hills there is a semi-permanent battery.

At the foot of these hills on small spurs are semi-permanent redoubts in the following order from west to east: Hachimakiyama, the West Panlungshan, "H" redoubt, Panlungshan East, and the "P" or Ichinohe redoubt which is about at the foot of Wangtai and was named Ichinohe in honor of its captor, the Japanese General Ichinohe. From Wangtai there is a continuous line of breastwork to the Tungchikuanshan (Keikwan), on which are two two-gun semi-permanent batteries connected by a breastwork. On a spur to the south and east of "P" redoubt is a permanent work called the North Tungchikuanshan Fort. Still further to the south and east is another permanent work called the Old Tungchikuanshan Fort. From here to the sea the hills are occupied by the Paiyinshan groups.

From the Erhlungshan the Chinese wall, converted into a trench, runs along well down the side of the range, but above the Hachimakiyama, "H," Panlungshan and "P" redoubts, and the North and Old Forts of Tungchikuanshan. Most of the remaining hill tops had small redoubts on them, while all positions were connected by trenches. On the group of hills just west of the Lun Ho is the Itzushan Fort, a permanent work, with a long line of trench running out

*San, is Japanese for hill; shan, Chinese.

from its western flank. South of it are the Hsiaoantzushan, a permanent fort, and the Taantzushan, a permanent battery, connected by a long line of trench and breastwork. 203 Metre Hill was a semi-permanent work. To its front is a ridge called the Namakayama, while to its northeast is the semi-permanent battery called Akasakayama. To the north is another semi-permanent battery called the Shinhodai, while north of all is a ridge with trenches called the Takasaki. To the south of 203 Metre Hill there are small infantry redoubts on the hill tops until the Taiyangkou Forts, permanent works, are reached. Along the sea the hill tops are occupied by permanent and semi-permanent works, mostly batteries. At the head of the Lun Ho valley, just south of Shuishih village on a small rise of ground called the Turban, there is a group of semi-permanent redoubts called by the Japanese A B & C, or Temple Forts. To the east and somewhat to the south of Shuishih village is a semi-permanent redoubt called Kuropatkin. Takushan, a hill about one and one-half miles across the Shuishih valley from the Tungehikuanshan, was occupied by a couple of redoubts. Those hills to which there was more than one military crest had trenches along one or more of the lower of these crests. From the northernmost Taiyangkou Fort across the valley to the Taantzushan there is a continuous line of parapet with a deep ditch. As the Taantzushan and Hsiaoantzushan Forts are connected by a continuous breastwork, this series of works made a second and inner line of defense. There is a line of works running from the Taiyangkou Forts to Pigeon Bay. Around the Old Town there is a parapet and ditch running from the hill at the mouth of the Lun Ho around the town to the coast. This parapet is of sufficient thickness to resist siege guns while the ditch is as much as twenty feet deep and fifteen feet wide. Owing to the rocky nature of the soil the scarp is almost vertical while the counterscarp has been built with an overhang. There are no ditch defenses. All positions are connected with adjoining ones and with Port Arthur by roads; those in the eastern half of the defense are often macadamized. On the Laotiehshan the Russians mounted a number of guns, while between the Shuishih valley and Nanshan they had prepared

several positions, consisting mostly of trenches, which they seemed to make no very determined effort to hold.

DESCRIPTION OF INDIVIDUAL POSITIONS.

The Sungshushan Fort (Fig. 1) is a permanent work of a triangular outline surrounded by a dry ditch, and is placed on the very top of the spur which it occupies.

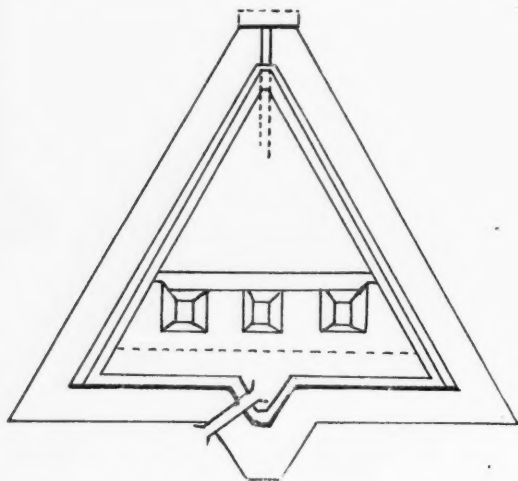


FIGURE 1.

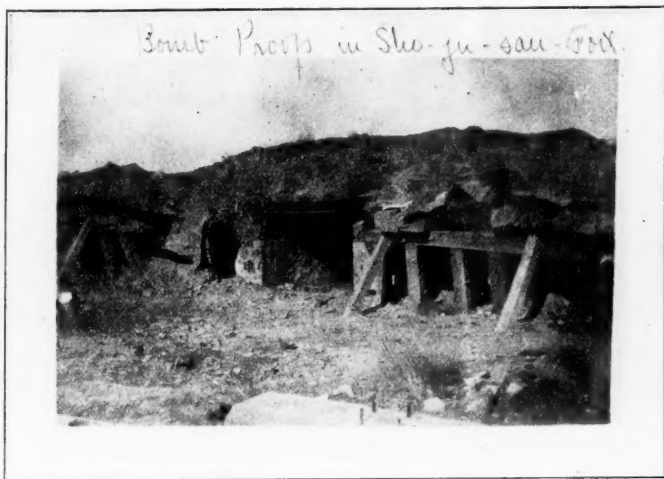
A

- 2, 15 c. m. quick firing Canet guns.
- 1, $7\frac{1}{2}$ c. m. quick firing gun.
- 3, 8.7 c. m. Krupp field guns.
- 1, $7\frac{1}{2}$ c. m. muzzle loading gun (Chinese).
- 1, 47 m. m. quick firing Canet gun.
- 3, machine guns.

- 1, 15 c. m. howitzer.
- 2, 8.7 c. m. field guns.
- 2, $7\frac{1}{2}$ c. m. field guns.
- 2, $6\frac{1}{2}$ c. m. naval guns.
- 2, 37 m. m. quick firing Canet guns.
- 3, 37 m. m. machine guns.

The rear half is occupied by a cavalier battery. The gorge face of the scarp is a concrete gallery, the two front faces of the scarp being the natural soil and almost vertical. The apex of the counterscarp is occupied by a concrete caponier connected with the main part of the fort by a concrete tunnel, the top and part of the sides of which are ex-

posed above the bottom of the ditch. The remainder of the counterscarp is of the natural soil and almost perpendicular. The parapet was of earth with wood revetment, thick enough to withstand siege guns. On top of the gallery in the gorge the Russians had constructed a number of bomb proofs. The armament found on capture consisted of (A).



BOMB PROOF IN SUNGSHUSHAN.

The slope of the spur on top of which this fort is placed is gradual but consists of three angles as shown in Fig. 2.

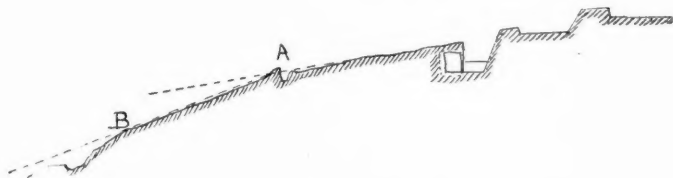


FIGURE 2.

At the military crest (A) the Russians had a trench. The cavalier battery could fire on no part of the glacis, the fire from the front parapet could reach only to (A), while the fire from that trench was useful only to (B). The space

beyond (B) for some little distance at the foot of the hill, not being exposed to fire from neighboring forts, was entirely dead.

The Erhlungshan Fort (Fig. 3) is a permanent work of square outline on the top of the hill on which it is placed.

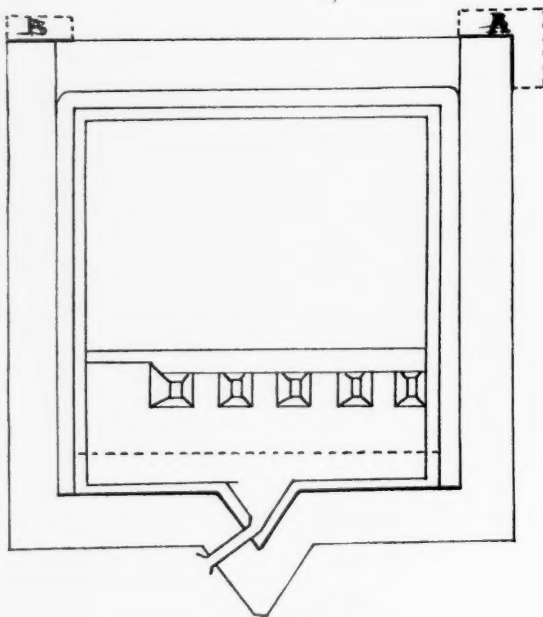


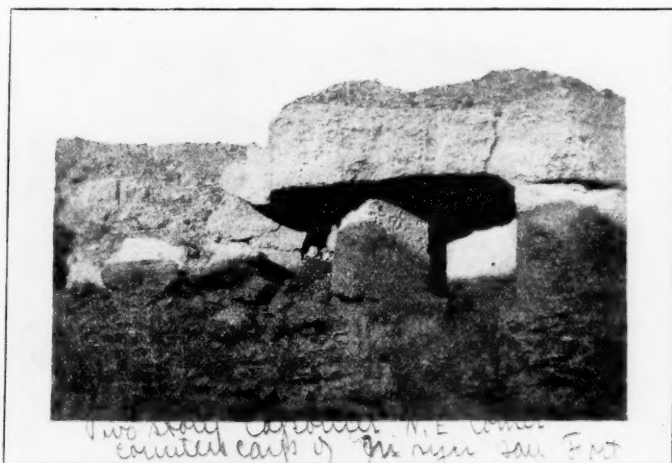
FIGURE 3.

B

- | | |
|--------------------------------------|--|
| 5, 21 caliber, 15 c. m. Canet guns. | 1, 12 c. m. smooth bore gun (Chinese). |
| 11, 8.7 c. m. Krupp field guns. | 2, 7½ c. m. field guns. |
| 1, 6 c. m. naval gun. | 5, 57 m. m. quick firing guns. |
| 2, 47 m. m. quick firing Canet guns. | 16, 37 m. m. quick firing guns. |
| 4, machine guns. | |

It is surrounded by a dry ditch, the part along the front face not being as deep as the remainder by about eight or ten feet. Just in rear of the center line there is a cavalier battery for four guns. The parapet was of the natural soil with wood revetment. The scarp of the gorge is occupied by a concrete gallery and ditch defense; the remainder of the scarp, and all of the counterscarp with the exception of the

part occupied by the caponiers A and B, is of the natural soil and practically vertical. The caponier A is two-storied on



CAPONIER IN ERLUNGSHAN.

account of the difference in level of the ditch along the front face and that along the side. The armament found on surrender consisted of (B). The glacis is similar to that of the Sungshushan Fort, and the same remarks apply as regards the field of fire of the cavalier battery, the front parapet and the trench on the first military crest, and the dead space at the foot of the hill. The capture of this fort and the Sungshushan involved the destruction of so much of them that had it not been for the models in the museum it would have been almost impossible to have told of what they originally consisted.

The Hachimakiyama, Panlungshan, "H" and "P"* redoubts were, as stated before, semi-permanent works on small spurs at the foot of the Panlungshan and Wangtai. They possessed good fields of fire but had some dead spaces in front of them. The armament found by the Japanese consisted of "C" East Panlungshan; "D" West Panlungshan.

C

- 2, 8.7 c. m. Krupp field guns.
- 1, 47 m. m. Canet gun.
- 4, 7½ c. m. quick firing Canet guns.

D

- 2, 7½ c. m. quick firing Canet guns.
- 1, machine gun.

* "H" and "P" and Hachimakiyama not known.

Wangtai, or "Watch Tower Hill," had a very steep slope (Fig. 4), and just room on its summit for two 15 c. m. Canet



FIGURE 4.

guns, which, though having a good command of all neighboring works and of the country to the front, could not fire on any part of their own slope. The slope could be fired on from the parapet and trenches running to the Panlungshan towards the west, and the Tungchikuanshan to the east.

The north Fort of Tungchikuanshan is of the outline shown in Fig. 5, and is surrounded by a dry ditch.

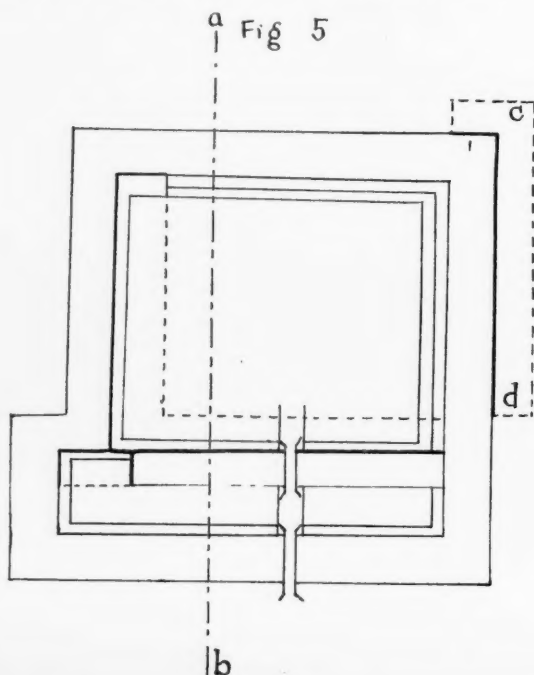


FIGURE 5.

While situated on a spur, it overlaps it to the front so that the ground on its rear face is considerably higher than that on its front face. (Fig. 6).

SECTION ON a b, FIGURE 5.



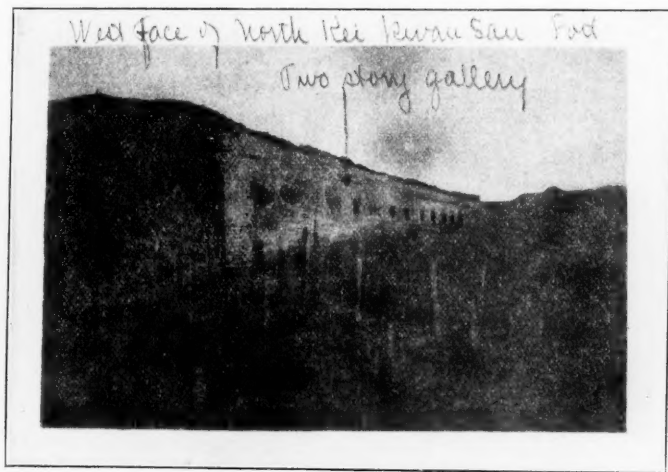
FIGURE 6.

E

- | | |
|--------------------------------------|--------------------------------------|
| 6, 8 c. m. Krupp field guns. | 2, 7½ c. m. field guns. |
| 1, 7 c. m. Chinese field gun. | 1, 7½ c. m. smooth bore gun. |
| 2, 57 m. m. casemate guns. | 2, 37 m. m. quick firing Canet guns. |
| 4, 25 m. m. san patsu* guns. | 2, machine guns. |
| 2, 47 m. m. quick firing Canet guns. | 3, 37 m. m. machine guns. |

*Machine gun.

There is a concrete counterscarp gallery along the east face (c d Fig. 5), one along the scarp of the gorge of the main work, and a two storied gallery along the scarp of the west face of the main work. The lower story is for ditch defense, the upper sweeps the glacis to the west. The para-



WEST FACE OF TUNGCHIKUANSHAN.

pets are of earth, wood revetted, thick enough to resist siege guns. The counterscarp and scarp, except in those places

indicated, are of natural soil and either perpendicular or almost so. The Fort had a good field of fire, but had to depend on "P" Fort and the Old Tungchikuanshan to cover some of its glacis. The armament found by the Japanese on capture was "E".

The Old Tungchikuanshan Fort is situated on a spur. It was a narrow work built of concrete. It was blown up by the Russians, and is so much of a ruin that little can be determined as to its outline, other than the fact that it was very narrow and that its greatest dimension was perpendicular to the main range of hills. The armament found by the Japanese was the following, "F." The two batteries on the Tungchikuanshan (semi-permanent works) have a glacis of moderate slope. Their field of fire was good. Their armament was 4 15-c. m. quick firing guns.

F.

- 2, 15 c. m. howitzers.
- 4, 47 m. m. Krupp field guns.
- 4, $7\frac{1}{2}$ c. m. quick firing Canet guns.
- 3, 47 m. m. quick firing Canet guns.
- 1, 12 c. m. naval gun.
- 1, machine gun.

F (continued).

- 1, $7\frac{1}{2}$ c. m. field gun.
- 1, $6\frac{1}{2}$ c. m. naval gun.
- 1, 37 m. m. machine gun.

G.

- 4, 8.7 c. m. Krupp field guns.
- 2, machine guns.

The redoubts on the Turban, and Kuropatkin redoubt have gently sloping glacis and good fields of fire. The armament found in the Kuropatkin redoubt on capture was "G." The redoubts on the Turban probably had similar armaments.

To the west of Lun Ho the first works are those on the Antzushan. The Hsiaoantzushan fort is a concrete battery (Fig. 7 a) situated on the top of a high hill of steep profile (Fig. 7 b).

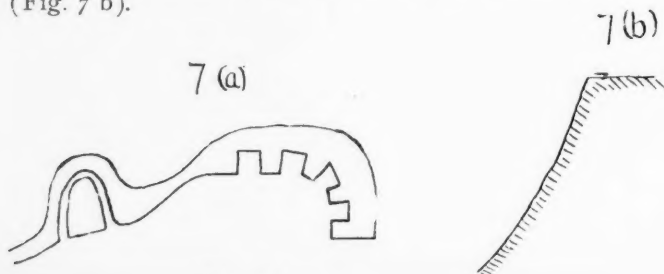


FIGURE 7.

The battery commands all the surrounding country, but is unable to fire on any part of its own slope. Its armament was "H."

H

4, 22 caliber, 15 c. m. Canet guns.

3, 7½ c. m. naval guns.

2, 57 m. m. quick firing Canet guns.

3, 37 m. m. quick firing Canet guns.

5, 47 m. m. quick firing Canet guns.

The Taantzushan fort is a permanent work of a square outline surrounded by a dry ditch. (Fig. 8.)

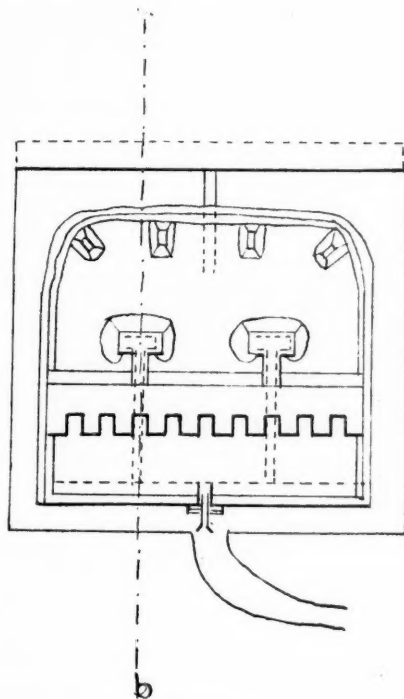


FIGURE 8.

It is somewhat down the side of the hill occupied by it. Just in rear of its right and left axis is a concrete cavalier battery with nine emplacements. The counterscarp of the front face is occupied by a concrete gallery connected with the main work by a concrete tunnel, the top wholly and the

sides partially of which, are exposed above the bottom of the ditch. The scarp of the gorge is a concrete gallery connected with the terreplein in front of the cavalier by two concrete tunnels running underneath the cavalier. The head of each tunnel is protected by a traverse occupied by a magazine. All other parts of the scarp and counterscarp are of the natural soil and perpendicular. The parapets are of earth, wood revetted, and along the front face there are numbers of traverses. The armament found was "I." The glacis is a gentle slope of two angles, the military crest being occupied by a line of trench. Fig. 9 is a section on a b, Fig. 8.



FIGURE 9.

I

4, 21 caliber 15 c. m. Canet guns.

1, 15 c. m. howitzer.

2, 7½ c. m. naval guns.

1, 9 c. m. mortar (old).

4, 8.7 c. m. Krupp field guns.

7, 37 m. m. quick firing guns.

The entrance to practically all permanent works was by means of draw-bridges. The Itzushan Fort (Fig. 10) is a permanent work of irregular outline.

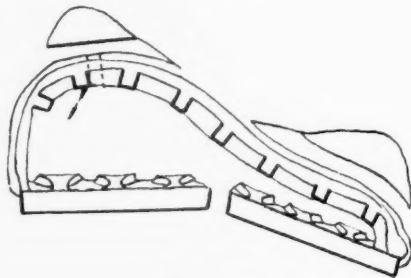


FIGURE 10.

Due to the small area of the summit (Fig. 10) of the hill on which it is placed, there is a ditch along but two parts of its front face. The gorge is a concrete gallery. Its front

face consists of concrete and earth barbette emplacements, the traverses being occupied by magazines. One of the ditches is connected with the main work by a concrete tunnel. There are no ditch defenses. The armament was "K." The Itzushan being a high hill of steep profile (Fig. 11) the fort could not fire down its glacis, though commanding all the surrounding country.



FIGURE 11.

K

- 1, 15 c. m. howitzer.
- 3, $7\frac{1}{2}$ c. m. naval guns.
- 4, 8.7 c. m. Krupp field guns.
- 2, 57 m. m. quick firing guns.
- 4, 47 m. m. quick firing guns.

The spurs towards the bottom of the hill were occupied by infantry trenches, but not in such a manner as to prevent there being a dead space at the bottom. (Fig. 11.)

203 Metre Hill is a saddle back, something of the shape shown in Fig. 12.

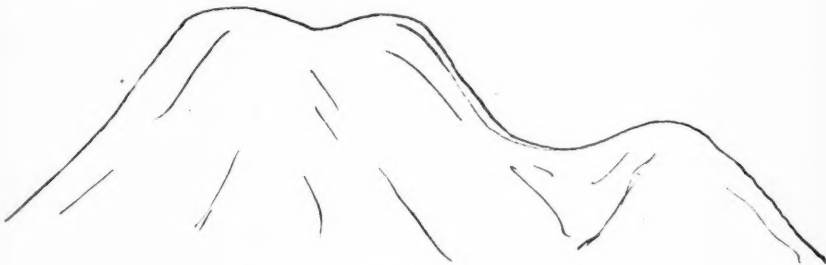


FIGURE 12.

The top was occupied by trenches and semi-permanent batteries. These works, and in fact the whole top of the

hill, was so torn up by shell fire and the struggle which had taken place on it, that hardly a trace of the works is left. The summit is of small area and narrow, especially at the western end. The slopes are steep. The front face was occupied by several tiers of trenches. At the west end there were five tiers. At the time of its final occupation by the Japanese the following armament was found:

- | | |
|-----------------------------------|--------------------------|
| 1, 21 caliber 15 c. m. Canet gun. | 1, 37 m. m. machine gun. |
| 1, 47 m. m. machine gun. | |

Of course when the Russians finally retreated they carried off what they could, while many of the guns were destroyed by the heavy fire concentrated at times on this hill. The remains of some of them can still be seen, partially buried in the debris. While this position has a fine command to the right, left and rear, and though it was higher than the hills to the front, the field of fire to the front was greatly limited by an almost parallel ridge. The Namakayama was on the other side of a small valley, which at the narrowest part of its bottom, near the west end of 203 Metre Hill, could not have been more than 100 yards away. Fig. 13 shows roughly the general outline of 203 Metre Hill and the adjoining ridges.

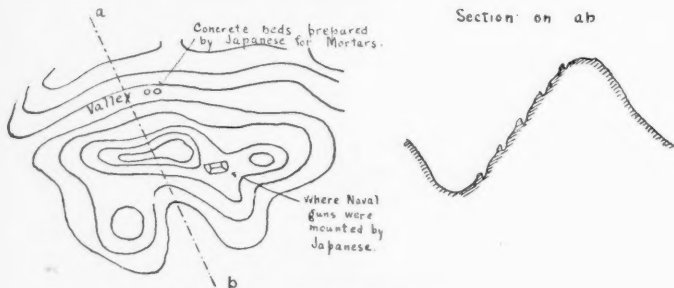


FIGURE 13.

The semi-permanent battery Akasakayama is on the summit of a steep hill that comes to a peak. It had the following armament:

- | | |
|------------------------------------|--------------------------------|
| 2, 22-calibre 15 c. m. Canet guns. | 2, 37 m. m. quick firing guns. |
|------------------------------------|--------------------------------|

The Shinhodai is a similar position, and probably had the same armament.

The battery on Golden Hill consists of five concrete emplacements, in each of which there is mounted a 15 c. m. howitzer. At the foot of and parallel to the hill is a concrete barbette shore battery of what appeared to be six 12 c. m. quick firing guns. Between this battery and the foot of Golden Hill, perpendicular to both, is a two-gun barbette battery of rapid fire guns, probably about 57 m. m.

All the positions on the north line east of the Lun Ho were commanded wholly or in part by hills to their rear. To the west of the Lun Ho 203 Metre Hill commanded everything. From this hill practically all of the harbor, including the dock yard, could be seen, as could all the New Town, and part of the Old. The battery on Golden Hill was looked into directly from the rear. All positions were supplied with searchlights.

TRENCHES, ETC.

The typical Russian trench (Fig. 14) is a narrow one, dug about five feet deep, that is just deep enough for a man standing to fire from.

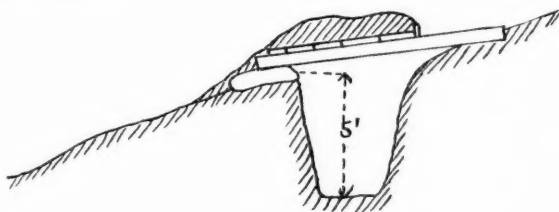


FIGURE 14.

Loop holes are constructed by means of sand bags and a parapet built high enough to protect a man standing. A head cover is then added by laying supports across the trench, placing on these supports planks, and covering the whole with the excavated earth. From the front nothing appears but a low parapet with loop holes at its bottom (Fig. 15).

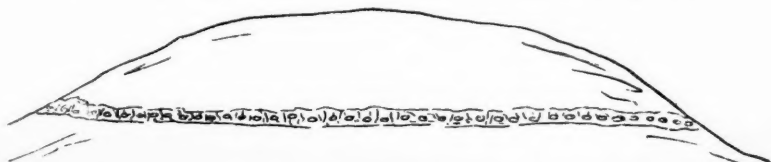


FIGURE 15.

The earth is kept from falling from the rear part of the head cover by a small plank laid on edge and nailed to the supports. Often on account of the shape of the ground, breastworks were built. In these cases the rear end of the support was held by uprights, generally braced to the rear. (Fig. 16.)

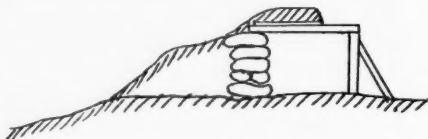


FIGURE 16.

In such cases a curtain of gunny sack was hung from the rear edge of the head cover. This for the purpose of preventing fragments from the rear hitting the men in the backs. Revetting, when necessary, was done either with planks, sand bags or boxes, or cans filled with earth. Timber seems to have been fairly plentiful. Toward the end of the siege, having run out of the regular sand bags, the Russians used different colored calicos, so that some parts of the works have a very peculiar appearance. The loop holes were rarely mere open holes made by sand bags, but generally contained a steel plate approximately square, about $\frac{3}{8}$ inch thick with an oblong hole in it for the rifle. (Fig. 17.)

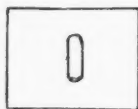


FIGURE 17.

Sometimes these plates were fastened to a wooden box with considerable splay. (Fig. 18.)

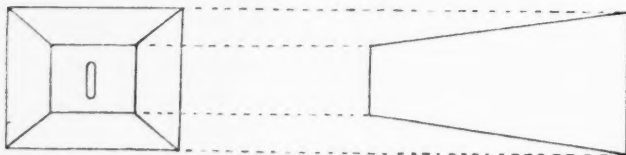


FIGURE 18.

The bomb proofs (Figs. 19 and 19 a) were of various kinds, ranging from several thicknesses of heavy timber supporting the necessary amount of earth to regular huts, high enough to stand in, with stoves and bunks inside, used by the Russians for quarters.

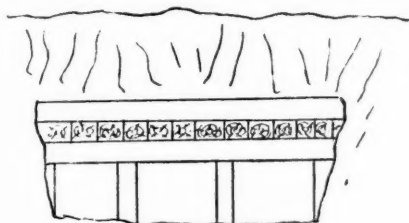


FIGURE 19.

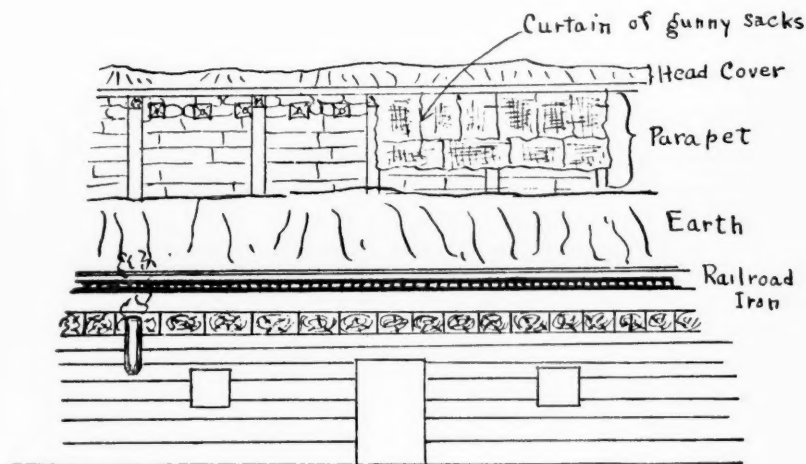


FIGURE 19 a.

The roof generally consisted of one or more thicknesses of heavy timber with one or two of railroad iron, on top of which would be several feet of earth. They were to be found on the reverse slope of all hills on which there were defenses. In many cases a breastwork would be on the actual crest of some narrow ridge with a steep slope. In such cases

it would often be on the roof of a bomb proof on the reverse slope. On the extreme left flank of the auxiliary Sungshu-shan there was a bomb proof, probably used also as a magazine, in the shape of a dome. It was built of concrete and covered with earth. (Fig. 20).

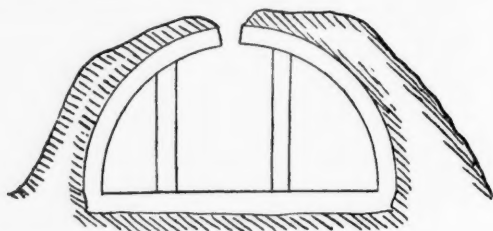


FIGURE 20.

When the bomb proofs could not be near the trenches, they were connected with them by covered ways.

The batteries, other than the permanent ones, were barbette earth batteries with every two guns as a rule separated by bomb proof traverses or magazines. The revetment was the same as that used in the trenches. The gun platforms were of wood. Where there were field guns, recoil wedges were used to run them back in battery. (Fig. 21).

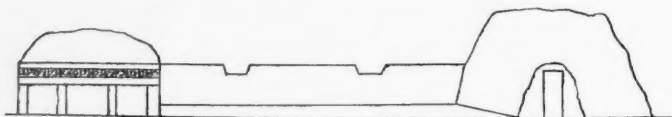


FIGURE 21.

The redoubts varied from trenches enclosing a small area, to works with parapets thick enough to withstand siege guns, and deep ditches with ditch defenses.

OBSTACLES.

On the slopes in front of all positions and in the ditches of the forts and redoubts every kind of obstacle was used. On all slopes were long lines of barb wire entanglements, on the outer strands of which were hung tin cans full of peb-

bles, so that the slightest disturbance created a noise; lines of chevaux-de-frise with barb wire holding them together and tangled up in them; crow's feet of all sizes and shapes with the points sharpened; boards filled with long spikes planted in the ground, with the points upwards; small sharpened stakes stuck up in the ground so close together that from a short distance they looked like wooden gorse; lines of wire charged with a strong current of electricity; lines of trous-de-loup; fougasses and mines carefully sodded over so that their whereabouts could not be known until they exploded; while in the ditches, in addition to many of these obstacles, were iron fences about ten feet high with sharp points sticking out in all directions.



WANGTAL.

POSITIONS OF FORTS, ETC.

The Russian fort, redoubt or battery was as a rule placed on the very top of the hill which it occupied. Along the greater part of the north line, in addition to the works on the hill tops, there were others on the spurs running out from the bottoms of the hills, such as the Hachimakiyama, the Panlung and Ichinohe redoubts, the north

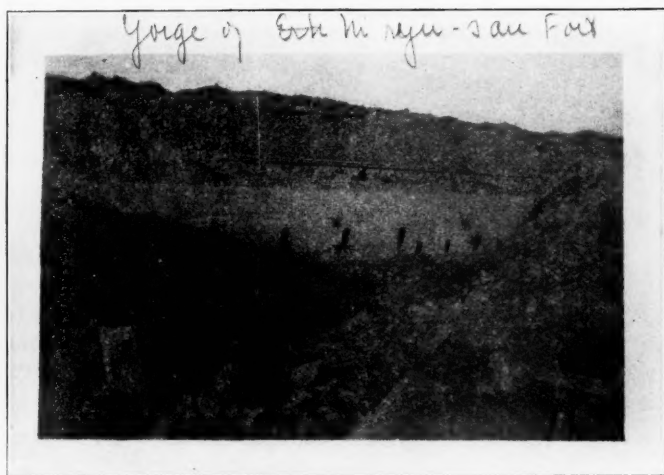
and east forts of Tungchikuanshan. Generally military crests were occupied by trenches, though in many cases, where near the bottoms of hills, they were not so occupied, as often the ground below, either wholly or in part, was not covered by fire from neighboring works; this left many dead spaces. Two examples of their failure to occupy military crests are shown in Figures 2 and 11, showing the profile of the Sungshushan and the Itzushan.

On some of the hills, due to the steepness of the slope, it was impossible to build trenches whose fire would sweep the slope; this was true of the upper part of Wangtai, the Itzushan, part of the Hsiaoantzushan and several others. The favorite type of permanent work was one in which the heaviest guns were mounted in a cavalier battery, generally well towards the rear of the fort. While they had good command and were well fixed for far defense, they were of no use whatsoever for near defense, and were often unable to fire even on the first parallel built by the Japanese in attacking the fort in which they were placed. Neither could they always cover the slopes of neighboring hills. Thus the Japanese parallels and approaches had often to resist nothing heavier than field and smaller caliber guns. The Russian trenches connecting positions in many cases ran up and down hill instead of following the contour. Sometimes the reason for this could be seen; more often a better field of fire could have been obtained by following the contour, the men in the trench would have been less exposed to an oblique fire from the down hill side, and the whole of a long line of trench would not have had to have been abandoned on account of an enfilading fire delivered from a just captured position at one of its extremities.

METHODS OF ATTACK.

As far as could be learned the attack on one position was similar to that made on every other. The Japanese would cross the Shuishih Valley, taking advantage of all cover and establishing themselves in some dead space near the foot of the hill, on which the fort to be attacked was placed, would dig their first parallel, this generally at night. Thanks to

the shape of the ground this parallel was often very close. The first one in the attack on the Sungshushan was about 600 meters from the fort. From this they would break out

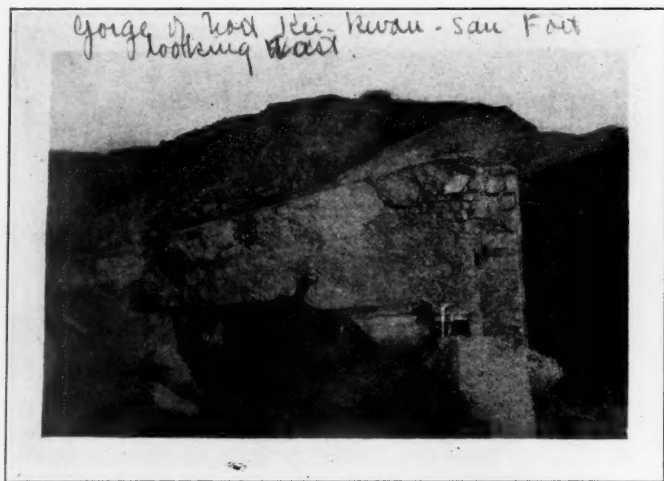


GORGE OF ERHLUNGSHAN.

single, alternately right and left hand saps. The next parallel would be established at some convenient distance, and so on. Whenever a Russian trench occupied a military crest, the Japanese would sap to it, take it by assault and convert it into a parallel. From a convenient parallel they would mine to the ditch defenses and either blow them up or drive the Russians out. Up to this point a number of assaults have been made and as a rule failed. This stage of the siege marks another point at which an assault is generally made and generally fails.

The ditch defenses having been destroyed or captured, and the ditches being dry there is no trouble about crossing the ditch and mining under the scarp. As a rule the part of the fort in front of the cavalier is blown up, and after one or more assaults the Japanese succeed in occupying all of the fort except the cavalier, on which the Russians make a final stand and from which they are finally driven.

During the siege the Russians made a great many sorties, especially at night. One of the favorite methods was for parties to descend the ravines on each flank of the Japanese



GORGE OF TUNGOHIKANSHAN.

parallels and when opposite them make a simultaneous assault on both flanks. The Japanese were often driven out, but later would recover the position. In this way parallels changed hands, temporarily at least, a number of times. During these sorties a great many hand grenades were used. To guard against these the Japanese had all their trench headquarters, telephone stations, etc., covered at the top by a wire netting. All regiments in the trenches had their headquarters in some convenient parallel, and these headquarters were not only connected with the rear by telephone, but also with all parts of the trenches occupied by the regiment. As they dug new approaches and new parallels they established new stations. The troops taking part in the attack on any fort were divided into three reliefs: one relief being in the front trench, another at headquarters, while the third would be resting in some safe locality further to the rear.

In changing reliefs, the one in the rear would go to head-

quarters, the one from there to the front, and the one at the front to the rear. As the siege became more advanced, two reliefs were kept at the front and one at headquarters.

While the Japanese constantly mined, the only occasion that could be learned of on which the Russians did so was during the attack on the north Tungchikuanshan Fort, during which the Russians countermined at the northeast angle. The Japanese became aware of it, so that practically no damage was done when the Russians exploded their mines. During the assaults the Japanese carried with them a number of wooden mortars used for throwing hand grenades into the Russian works.

In the attack on each position there was a great deal of hand to hand fighting, especially at the north Tungchikuanshan Fort and at 203 Metre Hill.

The trenches on 203 Metre Hill were captured one at a time and only after hard fighting during which they changed hands a number of times. Finally the Japanese were in possession of the trench just below the summit. They then succeeded in driving the Russians from the summit to a trench just below, on the reverse slope, but were unable to hold the summit themselves. So here they were, the Japanese in a trench just below the summit on the front slope, while the Russians occupied a similar position on the reverse slope. Whenever one side tried to occupy the summit the other attacked it, a fierce hand to hand fight taking place.

This state of affairs obtained until the Japanese continued a sap which they had started over the lower saddle (Fig. 12) of the hill, around the reverse side. As this threatened to cut the Russians off they retired leaving the Japanese in possession of the entire hill.

Naval guns that did much damage to the naval basin and the ships in the harbor were mounted on 203 Metre Hill, just above and to the west of the lower saddle.* Some concrete

* The following has been received from Lieutenant Reilly in answer to an inquiry by the JOURNAL, if this statement were true. "Since writing my report I have read quite a number of articles that say there were no naval guns on 203 Metre Hill. There was an earth emplacement on the saddle of 203 Metre Hill at the spot indicated in Figure 13. The Official Interpreter told me that it was the place where the naval guns were mounted. There seems to be some doubt about the question so I give my authority as only that of the Interpreter mentioned."

platforms for 11-inch mortars were built in the valley just north of 203 Metre Hill, but the surrender took place before the guns were mounted. During the siege the Eleventh Division occupied that part of the line from the Yellow Sea to and including the works in front of the north fort of Tungchikuanshan; the Ninth from there to and including the works in front of the Erhlungshan, and the First the remainder of the line. The Seventh Division was used as a reserve, but had a large share in the operations to the west of the Sungshushan.

EFFECT OF FIRE.

Those forts that had been captured were so much destroyed that it was difficult to see what effect fire had had on them. This was not the case in the surrendered forts, such as the Hsiao and Taantzushan and the Itzushan. In these forts the effect of the individual shells was very plainly seen.

In a number of cases insufficient or no protection against fire from the rear had been provided; as a consequence there was often a good deal of damage done, especially to the rear of traverses. In the battery at Golden Hill a shell had passed clean through the concrete rear wall of a shell room, leaving a hole of about three feet in diameter. The Russians remedied this by building rear traverses. The entrances to magazines were often badly placed and insufficiently protected. This was true also of the entrances to the covered way in the gorge of the Itzushan Fort (See Fig. 10). As they opened directly on the terreplein all shells that grazed the front parapet struck them, consequently they are badly damaged. To prevent injury to the interior, the Russians had blocked these entrances up with stone and sand bags, either entirely or else leaving a passage so small that one could just squeeze through. In the same manner they had had to block up their magazine entrances, as a shell coming either from the right or left front and striking one of them would go directly into the magazine (see Fig. 10). In this way one of the magazines in the Itzushan Fort was blown up.

In the rear edge of the parapet of each emplacement of the main battery of the Taantzushan Fort, was a large stone.

One of these had been struck by a shell and carried away, taking with it a large portion of the concrete, and consequently scattering fragments all over the emplacement. The concrete in front of another had been penetrated (see Fig. 22), and the stone, loosened from its position, was about to fall.

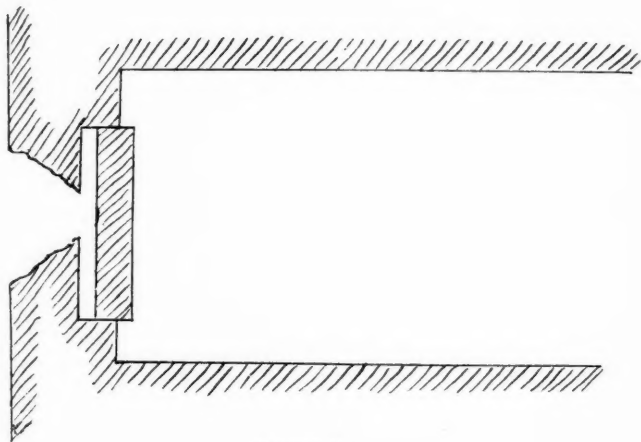


FIGURE 22.

What advantage was expected from this construction could not be seen, for, if the parapet had been solid concrete, only the portion hit would have been carried away, and in addition the fragmentation of concrete is less than that of stone. The concrete used throughout was of poor quality. It was made with large smooth unbroken stones, and cracked and fell to pieces readily. The thickness used was generally insufficient, and there were many examples of walls being completely penetrated.

The glacis and slopes of all positions were covered with shot craters, a great many of which very near the ditch must have appeared from a distance to be hits, while in reality they did no damage. The front slopes of hills, in rear of others, whose crests were occupied by works, were covered with shot craters, giving a vivid impression of the large number of shots fired and how comparatively few the hits must have been.

In the "Old Town" a number of buildings had been destroyed by shell fire, and most buildings had shot holes in them. In the New Town while many of the buildings had holes in them the damage done was not great. While the naval shops and docks were damaged, they were not destroyed, and at the time visited were being used by the Japanese for the repair of the Russian ships.

In one of the buildings in the outskirts of the Old Town the Japanese have established a museum. In this building and around it on the outside they have at least one of every kind of weapon used in both the attack and defense; either examples or models of all obstacles, mines, fougasses, trenches, batteries, bomb proofs, forts, before and after capture, articles of clothing, medicines, bandages, tools, electrical apparatus, and in fact everything that is connected in any way with the siege. The Russians apparently had in their possession small arms and guns of all calibers and makes, from the smooth bore muzzle loader up to the present patterns. Among the curiosities was a machine consisting of five magazine rifles fastened in a rack with an arrangement for loading and firing them simultaneously. There were a number of steel shields mounted on small wheels, there being holes in the shields for machine guns. These were used by the Japanese in their attacks.

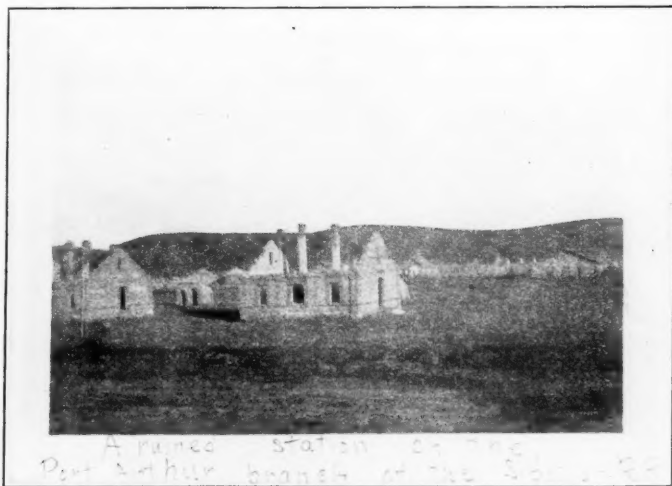
At the mouth of the harbor eighteen wrecks were counted. None of the ships sunk by the Japanese to block the channel had been sunk exactly between Golden Hill and the Tiger's Tail. They were sunk in a rough semi-circle so to speak, around the entrance of the harbor. A number of them had been run ashore quite a distance from the entrance. In the harbor the Russians, before surrendering, had done a lot of apparent but little real damage. They had sunk a large number of mine planters, dredges, lighthouse tenders and merchant ships, generally by opening their sea valves, and there they are resting on the bottom close in shore, waiting until the Japanese are ready to pump them out. The Russians also sank a large number of steam launches, but the Japanese promptly raised them; and they are now in use. Officers and men on a few days leave are con

stant visitors, and may be seen at all hours of the day visiting the different positions.

The accounts given of the amount of ammunition and stores surrendered vary greatly. One of the members of the committee which went over the captured stores said there was a large amount of clothing, plenty of flour, salt meat and medicines, no fresh meat, a shortage of bandages, and not very much ammunition.

The Japanese said little about Stoessel, but gave all the credit of the siege to General Kondratchenko, who commanded one division of Siberian rifles and who was killed during the last part of December.

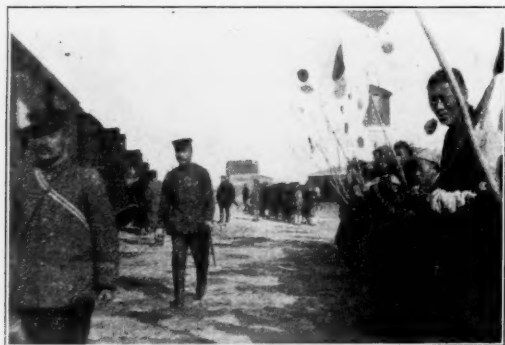
Port Arthur was not a first class fortress. The permanent works were not of the most modern type, and were of poor material. Their heaviest guns being placed for far defense alone, by the absence of their fire on their own glacis, materially reduced the amount of work necessary for building the Japanese approaches. Most guns were mounted in barbette, a very few on disappearing carriages, none in cupola or turret mount.



JAPANESE TROOPS, ETC.

Only those things are mentioned which have not been

seen in other reports or in "Notes of Military Interest." The Japanese having changed the gauge of the railroad from Port Arthur to the north, requisitioned engines, freight cars, third class coaches from the different Japanese railways and placed them on this line. The road is single track and rock ballasted. On the way from Port Arthur to Tashihchiao Marshal Oyama was met on his way down, also a large number of troops, principally field artillery. The Marshal was traveling with an infantry escort of the "Guard" in a special train made up of third class coaches. The trains



OYAMA'S TRAIN AT A CHINESE VILLAGE.

carrying the artillery consisted of from twenty-eight to thirty carriages, including box cars for men and ponies, with occasionally a third class coach for the officers. It was estimated that one such train would carry one battery. The ponies were placed eight in a car, four at each end, facing the center. They were tied by their halter shanks to a rope stretched in front of them. The doors on each side of the

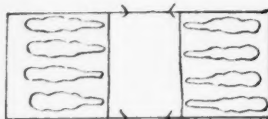


FIGURE 23.

car were left either partially or wholly open and the space between the doors was occupied by three or four men.

The caissons and pieces, unlimbered and covered with tarpaulins, were placed in the gondola cars. The men sat on the floors of the box cars, their equipment being hung from hooks in the roof of the car. They were fed by having



ON THE ROAD.

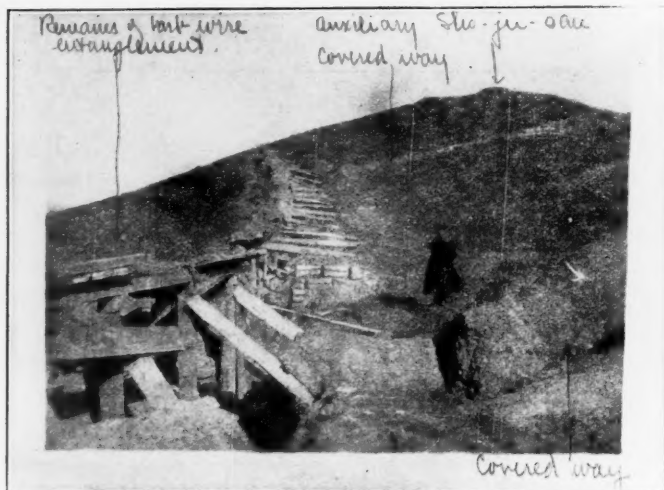
cooked rations ready for them at certain stations. When the train arrived they quickly filled their mess tins and ate on the train after leaving the station. At most of the stations there are a few quartered troops. At every station is a bulletin board on which is pasted a map of that town and the surrounding country. As many trains as possible were being run, as there was one on every siding, there be-



A DALNY STREET.

ing at least two sidings every hour of the fourteen hours run from Sanshilipu Junction to Tashihchiao.

The town of Dalny is divided into two parts, separated from each other by a line of gendarme sentinels. One half contains the town proper, and includes all houses of ill-fame and questionable resorts. The other half nearest the docks contains nothing but store houses, barracks and camps. The troops on arrival are marched to the latter and until they embark for Japan are not allowed in the other part. As the forbidden part contains the Russian official town and various points of interest, the men without arms, in a column of route, are led around from one point to another by officers, generally a company at a time. At the time of my visit there were then forty Japanese transports in the harbor, also a hospital ship.



SUNGSHUSHAN.

The Japanese transport as a rule is not over two or three thousand tons. On the one I traveled on from Chemulpo to Dalny, the Sumiyoshi Maru, the space between decks was about five feet six inches high. Instead of separate bunks they have two platforms, one on the deck, the other above it half way to the next deck. These platforms are as wide as the average Japanese is tall and run fore and aft in the compartments they are in. The men sleep on these side by side.

There is no division of the space into separate bunks. Outside of those belonging to the ship's officers there was but one stateroom on the boat. On the deck along the side they had built temporary wooden latrines. These were well scrubbed every morning. The number of men carried by the average transport could not be found out.



COUNTERSCARP GALLERY, SUNGSHUSHAN FORT.

On arrival in Japan all troops, including general officers, go through a quarantine station. One of the three to be used is in the outskirts of Kobe. This one was visited. An infantry colonel was in charge. There was a large number of doctors and men of the sanitary corps of the army. The station is on a beach and has two docks of its own. The men and officers land on one of these docks and go directly to a large room. Here each man is given a net, a chain purse with a lock to it, and a ring for one of his fingers; to the ring is fastened the key of the chain purse and a tag with the number of the purse and the net on it. He places all his valuables in this purse and puts the purse and all leather articles, such as shoes, etc., in the net. The nets are put in hand cars and run to a fumigating room by attendants. The men

then go to another large room where they undress and place all clothing in bags, which have the same number as the nets used by them. They place these bags in cars, which are



REMAINS OF CAVALIER BATTERY IN SUNGSHUSHAN.

run off by attendants and run directly into the disinfecting machine. The baths for the men open off one side of the undressing room. They consist of a number of separate rooms; each one contains a cement tank eight feet by eight feet. Four men bathe in each one of these tanks at a time. After bathing they go out through doors on the other side of the room from that in which they entered. Here is a large waiting room where they find hot tea, cakes and cigarettes in abundance. Adjoining this is a room where the bundles of clothing are brought when disinfected, still in the same cars. The attendants unload them, call off the numbers over a counter in the door between the room and the waiting room, and pass the bundles over to their owners, who dress. When all are dressed they pass into another large room marked with numbers, a couple of feet above the floor all around the room. Each man goes to his number and finds

the net containing his leather articles, etc., and purse. From this room they pass into the open air, turning in their net, purse and ring with the key and tag and number as they go.



HOUSE ON SUNGSHUSHAN.

Here they are joined by their officers. There is a staff officer in waiting who conducts each organization to its camp, which has already been prepared for it. When the men go into the undressing room the officers go into a room reserved for them. Here each officer has a bath to himself, on leaving which he goes into an officers' waiting room, where he is served with tea, cakes and cigarettes. There is a separate bath and waiting room for general officers and their personal staffs. At this station they expected to handle several thousand men a day.

The barracks and stables of the first line cavalry regiment were visited at Osaka. This regiment has a large number of Australian ponies, as many as 200. Most of the officers own them, as well as Chinese ponies. The regiment, except the depot squadron and some convalescent officers, was in Manchuria. There are no regular blacksmiths; all first-class privates must be able to do the work. It takes four

men to shoe one pony, and then it is badly done. They do not have separate shoes for the fore and hind feet. The adjutant of the regiment, who was convalescing from a wound received in Manchuria, said they had found during winter in Manchuria that two calks to a shoe were not sufficient, so used three and found that number satisfactory. On each side of the cantle they carry a pair of extra shoes in a leather pocket. The men are not at home around their mounts; they often seem afraid of them, and do not know how to approach a horse or how to behave when near one. Seventeen million yen is to be spent in the next twenty years on the improvement of stock. It is thought at present that a good many animals will be imported from Hungary.

The Japanese army is at present in a transition stage as regards uniform. The new uniform of olive drab for field service has been prescribed, but at present the majority of the troops have their old uniforms. Many of the officers are wearing the new uniform. The cloth out of which they are made varies greatly in shade. Some officers were seen wearing new uniforms made out of the greyish cloth used by the Russians for overcoats. Though the men are in blue, officers are often seen at different formations clothed either partly or wholly in the new uniform. In Korea and the Liaotung Peninsula, officers are frequently seen wearing at the same time parts of the blue and of the olive drab uniform. They appear at all times in a great variety of foot gear. While the new uniform has quite a little color to it, it is hard to distinguish an enlisted man or noncommissioned officer from an officer, as they all have the same amount of color on the same parts of the uniform. The rank is shown by a shoulder strap worn by all, including third class privates. All troops have an olive drab overcoat, cut very loose, especially in the back. The looseness in the back is gathered up by a strap. When this strap is undone the man can wrap himself in his coat as if it were a blanket. On each side of the coat there is sewed, as in the British service, a brass hook to hold up the belt. On the left side of the blouse all men have a cloth loop fastened by a button, for holding up the belt. In

the infantry this loop passes through the leather holder of the bayonet scabbard (see Fig. 24) and thus holds it in place.

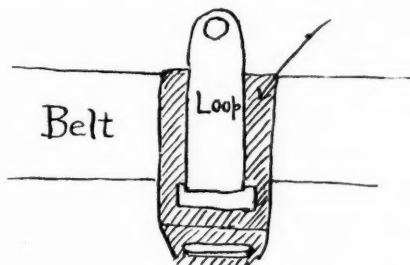


FIGURE 24.

In winter the Japanese troops wear very heavy woolen underclothing made like sweaters. Then comes their blue clothes. On top of their blouse they wear a sleeveless sheep-skin jacket, fur inside, and on top of this their overcoat, which in addition to its cloth collar has a large detachable fur one. On their feet they wear first a sort of half slipper made of felt. These cover their toes and part of their instep; on top of them they wear heavy woolen socks, then shoes, and on top of all straw shoes. The officers generally wear a fur boot, fur inside, and leather boots on top. To protect the head they have a sweater hood which covers everything except their eyes, nose and mouth, and reaches down over the shoulders, back and chest. On top of this they place their ordinary cap, then turn up the collar of their overcoat, and on top of all pull up the cloth overcoat hood. The chin strap is worn by all, under the chin, where it does not interfere with the use of the mouth, and effectually holds the cap on in the highest wind.

It was noticed that the infantry never drop their butts on the ground when coming to an order, but always lower them gently.

The Japanese officer is allowed an enlisted man as a personal servant. The servant, or as they prefer to call him, "orderly," accompanies the officer everywhere.

In Korea Japanese troops are seen everywhere. In Seoul there were about 3,000 infantry, a few cavalry, and eighteen

field guns. The new Thirteenth regular division is scattered along the western part of Korea, while the Fifteenth is on the east coast. The new Fourteenth and Sixteenth Divisions are stationed in Manchuria. The garrison at Port Arthur, about a regiment, belongs to the Sixteenth.

THE KOREAN ARMY.

While in Seoul the barracks of a regiment of infantry were inspected and a number of drills witnessed.

The uniform is very similar to that worn by the Japanese. The drill is Japanese, and everywhere it is evident that Japanese ideas are the governing ones. The manual of arms was done with snap and precision. In coming to the order the butts were never dropped, but always lowered gently. The close order drill was very good, there being few mistakes made and those being minor ones by individuals. The firings in close and extended order were well executed. Though they always raised the sight leaf, no attempt was made as far as could be seen to set it at any particular range. The extended order drill and formation for attack was fairly well done, up to and including the rapid fire. When it came to the charge there was a good deal of hesitancy and looking around, a general bunching up followed, then finally a spiritless advance that soon came to a halt.

An officer of the General Staff present said it was no good, but it did not seem to worry him in the least. The company seen had about 180 men present at the drill, and as the barracks to be visited were indicated and as the company was turned out especially for this drill, it probably was the best one in Seoul. In one corner of the drill ground they had a couple of horizontal bars and a raised platform for gymnastics. Three squads of about twelve men each were marched over here. Three men stepped out and went through some stunts, which they did very well, then three more not so good and a third set of three who were fair, nothing more. It was then noticed that the first three who on finishing their stunts had fallen in on the left of their squad had quietly worked up again to the right, and it was therefore apparently their turn again. Though some little time was spent here only three

or four men out of each squad did anything, the rest merely standing there.

The barracks are long, one story brick buildings, built around a yard. Inside they are about nine feet wide, and six feet of this is taken up by a long platform about two feet above the floor. In winter time this floor is heated by a fire underneath in the regular Korean manner. The men sleep on this. Above it are shelves on which they place what little equipment they have. They have the Japanese knapsack and field equipment, but from the dusty condition of those seen and the difficulty experienced in producing some parts, it was evident that marching order is seldom used. The officer said they sometimes, though not often, made practice marches. As the men are recruited from the coolie class they should be good marchers and burden carriers. The kitchens were dirty. The cooking is done in the regular Korean manner, in earthen jars, placed over rude ovens. They seldom get any meat, their principal food being rice and a variety of large turnips. There was no opportunity of witnessing any target practice. They have a range outside of the city, and every week every man shoots five rounds. The maximum range is 300 yards. They are said to be fair shots up to this range. They are armed with the Sanchunensiki rifle, model 1896. They have also a number of obsolete French rifles.

The men are slouchy and dirty, their uniforms fit badly, are always dirty, and often torn. They have all the earmarks of the typical Korean, laziness, dirtiness, and a general lack of spirit and smartness. It is stated by the military authorities that there are about eleven thousand men under arms, and that there is a reserve of double this number. They count all men who have ever been in service as reservists; there is no scheme, however, for mobilizing them.

Their companies consist of 200 men and five officers, four companies to a battalion and three battalions to a regiment.

They have two squadrons (150 men) mounted on Chinese ponies and armed with lances who act as a guard for the Imperial household.

The artillery consists of two field batteries, unhorsed and

having between them about twenty-four field, ten machine and four mountain guns. They are of French and Japanese makes, old models.

They have a Primary and High School for cadets, also a War College for officers. In all three institutions the instructors are graduates of Japanese military schools. Men are enlisted from eighteen to thirty. Enlistment is voluntary. There is no term of enlistment; the men come and go as they choose.

The pay table is as follows:

OFFICERS.		ENLISTED MEN.	
	Per Month		Per Month
General	* Y250	Sergt. Major	Y20
Lt. General	200	First Sergeant	10
Maj. General	150	Sergeant	8
Colonel	98	Corporal	6
Lt. Colonel	73	Private	4
Major	51		
Captain	40		
Lieutenant	30		
Ensign	25		

These are the following Bureaux:

1. Military Bureau
 - (a) Infantry Division.
 - (b) Cavalry Division.
 - (c) Artillery and Engineer Division.
 - (d) Medical Division.
 - (e) Naval Division.
 - (f) Martial Law Division.
2. Strategic Bureau.
3. Bureau of Education.
4. Military Treasury.

The following are the stations of the army; the General Staff refused to give the number stationed at each.

Seoul, Kangkeido (said to be 6,000).
 Suwon.
 Chungju, Chung Chondo.
 Hwangju, Chung Chongdo.

Kwangju, Chullado.
 Taiku, Kungsangdo.
 Pingyang, Pingando.
 Wiju, Pingando.

THE KAI-FU RAILROAD.

The Seoul-Fusan, or as the Japanese call it, the Kai-Fu [the first syllables of Kaijo (Seoul) and Fusan] railroad, is completed from Fusan through Seoul to An-ju. It is the intention now to continue it over the route of the present military railroad used by the Japanese for bringing up supplies for the last war from Wiju to Mukden. There is a number of trains each way every day. About fourteen hours

* Y, Yen=50 cents gold.

are necessary now to go from Fusan to Seoul. The time is constantly being reduced, while the roadbed is being straightened and many of the grades reduced. It is a rock ballasted, single track road, has the standard American broad gauge, heavy rails and American rolling stock. The engines came from the Baldwin Locomotive Works. The cars are the regular American day coaches with some differences as regards the interior. They have first, second and third class. Generally the first and second class are parts of the same car, while the third is a separate car. The seats in the first class are similar to those used in an ordinary American day coach, the second class have wooden seats, while the third have wooden seats with straight backs. There is a buffet to the first and second class coaches. All cars are generally well filled with passengers.

While the grade in many places is steep and will have to be cut down, the road as a whole is carefully and well built. The sidings are fairly numerous, though not as a rule long. The bridges have stone substructures and steel superstructures. Several were washed away during the last rainy season, but are rapidly being replaced by stronger stone ones. The culverts throughout are of stone. The banks of all streams that run under the road bed and of streams that are parallel to it and might wash out the embankment are revetted with stone to prevent them altering their courses. The embankments generally have layers of sod laid horizontally about every foot (Fig. 25) or else have a series of banquettes as shown in Fig. 26.



FIGURE 25.

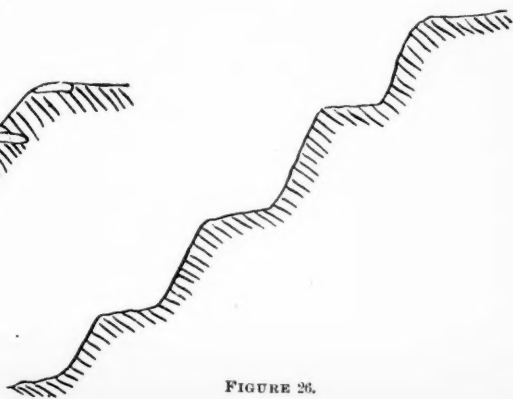


FIGURE 26.

The tunnels, of which there are very few, are built of stone and brick. The stations are connected by telegraph. All along the road there is plenty of stone available for repairing purposes. Outside of the few tunnels and bridges there would be little trouble in double tracking the road.

THE PEKING-HANKOW RAILROAD.

The Peking-Hankow Railroad is completed with the exception of the bridge across the Yellow River. The trains run only during the day. It is necessary to buy a ticket each morning for the day's run. Four days are necessary to go over the road. When the Yellow River bridge is completed they expect to make the run in three days, and later to have express trains, and make it in two. The first night stop is at Shin-te-fou, about twelve hours run from Peking. The next day the Yellow River is reached about 3:00 in the afternoon. This must be crossed in a sampan, picked up along the river bank. On account of the many sand banks which have to be gone around it takes about three hours to cross. There is a train leaving the other side between 6:30 P. M. and 7:00 P. M. This train goes to Tsin Chou, about two hours run. Here it is necessary to remain until 1:00 P. M. the next afternoon, when there is a train for Tchu Ma Tien, which is reached about 7:00 P. M. The next day a run of about twelve hours puts you in Hankow about sunset. There are no arrangements made on the train either for eating or sleeping.

At Shin-te-fou there is no accommodation of any kind for foreigners. The conductor will generally give permission to sleep in the train. At Tsin Chou there is an inn kept by two Greeks, while at Tchu Ma Tien there is a so-called foreign hotel kept by a Chinese.

It is necessary on leaving Peking to take at least two days food. Blankets will be found convenient throughout the trip.

The road is a broad gauge, rock ballasted one. Though rock ballasted, the surrounding country is so dusty that everything in the train is covered with dust. The road has but

one track, but there are long sidings at every station, of which there is an average of two or three to every twenty-five miles. These stations are neatly built of stone and are connected by telegraph. At every station there are from twenty to one hundred Chinese railway guards, armed with various patterns of German rifles, generally made in the seventies.

The bridges are of steel with stone abutments. The Yellow River bridge is a steel truss bridge on steel piles. There are twenty-four spans. Gravel and construction trains are run over it. The engineer in charge expected to have it completed by the first of January, 1906. The bridge is lighted at night by arc lights. By many it is considered not sufficiently strong to withstand the heavy rises of the Yellow River.

The rolling stock is all built by the French firm of Péhan. The engines are the same as those used on the French and Belgian roads, and have the name of the maker on them in both French and Chinese.

There are two kinds of passenger coaches, one divided into first and second class compartments. The other is for third class passengers. The coach for first and second class is similar to those seen on the continent of Europe. There is an aisle down one side from which there opens two first class compartments and three second class, while between the two classes of compartments is a stove and an arrangement for heating the cars which generally is not working.

The third class cars contain seats on each side of the center aisle. The backs are straight. The car will hold ninety-two men. Above the seats on each side are heavy wooden shelves, about three and one-half feet wide and three feet below the roof of the car. These racks are for the many bundles carried by the Chinese passengers.

There are two classes of freight cars, box and gondola. The box cars carry fifteen and twenty tons, the gondola cars carry twenty tons. Some of the gondola cars have a center side door which slides towards one end of the car, while others have three doors to a side, of the type that let down. All cars have two trucks of four wheels each. The wheels

are open wheels with spokes. Most trains are made up both of freight and passenger cars. Freight trains are run also.

The average train is made up of ten or twenty passenger coaches, all third class except one, and four or five freight cars. The third class cars are always crowded, the second comfortably full and the first occasionally full. The engine drivers and firemen are all Chinese, as are all the train crews with the exception of one head conductor on each train, who is generally French or Belgian, sometimes Italian.

The prices are moderate; the second class is two-thirds of the first, and the third one-third of the first or one-half of the second. There is a good deal of traffic in both directions on the road.

From Peking to the Yellow River the country is level. There are large numbers of villages in every direction and occasionally walled towns. South of the Yellow River the country is rolling, and as Hankow is approached becomes hilly. There are no tunnels. The road was easily built and it would require but little labor to double track it. The only problem in any way difficult in its construction was the bridging of the Yellow River.

MACHINE GUNS IN THE RUSSIAN ARMY DURING THE CAMPAIGN IN MANCHURIA, 1904-1905.*

BY LIEUTENANT COLONEL MONTGOMERY M. MACOMB, ARTILLERY CORPS.

THE Maxim automatic gun firing the standard service ammunition, caliber 0.3, was the machine gun furnished the Russian infantry during the Manchurian campaign, but they could not be supplied fast enough to fill the demand, and the Japanese were always superior in the number of machine guns available. The Russian authorities were so fully impressed with their importance that after the battle of Mukden they determined to attach to the cavalry regiments detachments armed with an automatic weapon of a suitable type.

In March, 1905, there were fifteen of the new mounted machine gun detachments with regiments of the First, Eighth, Ninth, Tenth and Twelfth Cavalry Divisions, all serving in European Russia, while there were ten in Manchurian armies, viz: Four with the Orenberg Cossack Division, four with the Fourth Don Cossack Division and two with the Ural-Trans-Baikal Cossack Division. At the end of August, 1905, some notes were obtained concerning such a detachment which had been organized to accompany the Ural-Trans-Baikal Cossack Division, and which was detrained at Kungchuling previous to joining. The accompanying vehicles bore the inscription "Konnaya Pulemetnaya Commanda — Polka" (Mounted Machine Gun Detachment, — Regiment). The personnel was taken from the four Mounted Machine

*This article was prepared by Colonel Macomb for the Military Information Division of the General Staff, with the request that it be published in the JOURNAL OF THE U. S. CAVALRY ASSOCIATION.

Gun Detachments of Dragoon Regiments Nos. Twenty-two, Twenty-three, Twenty-four of the Eighth, and Twenty-six of the Ninth Cavalry Division, being composed of picked men of above the average intelligence, while the horses were strong, stocky beasts, also brought from Europe from the regimental establishments. Having been in charge of competent men, they had been well cared for and were in excellent condition after their long journey of over 5,000 miles.

The establishment of a machine gun detachment was as follows:

	Officers.	Men.	Horses.	Guns.	Cart.
Fighting Battery.					
Lieutenant in command	1		1		
Noncommissioned officers		3	3		
Gunners, private		6	6	6	
Ammunition horse drivers, mounted, two per gun		12	24		
Armorer		1	1		
Train.					
Cart drivers		3			
Baggage carts, one-horse			1		1
Ammunition carts, two-horse			4		2
Officer's servant		1			
Total	1	26	40	6	3

The gun is that which is described in "Streffleurs Oesterreichische Militarische Zeitschrift" for July, 1905, as "Rexersche Automatische Gewehr" (the Rexer Automatic Gun), arranged for the Russian infantry cartridge. These guns were made in a hurry, the construction was rough, and the metal of some parts was too highly tempered, making it brittle and causing frequent breakages. The part which is apt to give way is that marked *a*, Fig. 1, upon which the force of recoil is quite heavy. The magazine is of tin, and its general outline is that of a segment of an annular arc of forty-five degrees, and it holds twenty-five cartridges. In loading, it is inserted in the left side of the breech from the top and remains there during the firing (see Fig. 1, *a*). Occasionally the firing was interrupted by premature explosion of cartridges, which seemed to occur when the mechanical action was stopped before the magazine was

emptied, in which case the last cartridge was apt to explode. These accidents were very annoying, and it was found absolutely necessary to have with each detachment a competent armorer with full repair kit and many reserve parts, as well as several extra barrels. Danish officers state that the above defects, complained of by the Russian commanders, do not

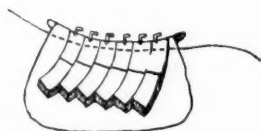
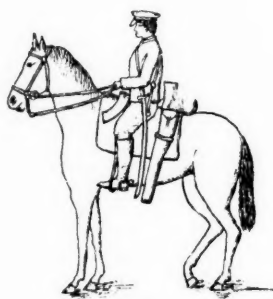
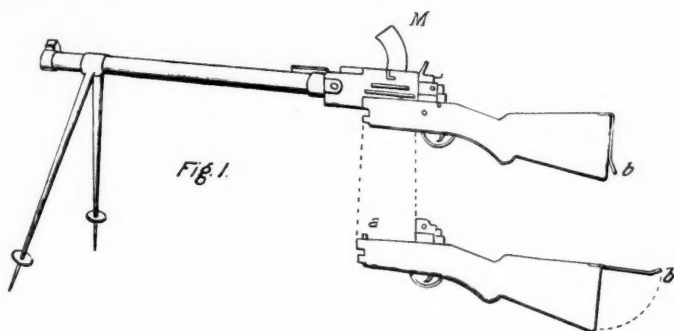


Fig. 2.

Fig. 3.

CAVALRY EQUIPMENT.

occur with the more carefully made Danish gun. The metal magazines are carried in leather cartridge pouches of the same general shape as the magazine and holding eight of the latter. Two of these pouches are connected by a broad leather strap with an orifice in the center. Such a pair is supposed to be carried by the gunner in front of his saddle-pack (Fig. 2) in order to balance the weight of the gun, which is carried on the left and rear of the saddle, in a leather bucket reaching to the stock, the haversack being

carried on the right side (see Fig. 2 and Fig. 4). It has been found that the ordinary dragoon saddle may be adapted to the purpose in place of the special one at first thought necessary. The ammunition pack-saddle has an iron hook piece to which six lugs are attached, the upper ends of which are hinged. On these lugs are hung the pairs of pouches



FIGURE 4.

Showing the Gunner, Three Drivers and Three Ammunition Horses, Forming One Element of the Automatic Gun Detachment, Rexer Type, of the Primorsk Dragoon Regiment.

already spoken of, the elements of each pair balancing each other on opposite sides (Fig. 3). The full load designed for a pack horse is six pairs, twelve pouches— $12 \times 8 = 96$ magazines— $96 \times 25 = 2,400$ cartridges. This method, however, does not admit of any forage being carried by the horse.

In the Primorsk Dragoon Regiment, which had had its detachment organized for some time, the cartridge pouches have been divided among three horses instead of two, thus forming a lighter load of eight pouches containing sixty-four magazines or 1,600 cartridges (see Fig. 4). This requires three mounted drivers. These pack-saddles were originally adapted for five (not six) pairs, and even five pairs were found too heavy. Whether drivers could habitually carry a pair of pockets on their saddles was a question still undecided. In actual practice neither they nor the gunners were doing so, as will be seen in the accompanying photograph showing the gunners, three drivers and three ammunition packs. The men are armed with the dragoon saber, dragoon rifle and bayonet. Their organization took two weeks to complete. No special instruction in firing was considered necessary for those who were already familiar with the rifle. In fact, it was claimed that the use of this gun was found to be easier and less fatiguing than that of the rifle, being fired from a rest in a lying position. The fork or rest is part of the equipment, and the use of the magazine makes loading simpler than from the clip. In firing single shots no recoil is felt, and in rapid or magazine fire the gun merely vibrates, but not to such an extent as to prevent the gunner keeping the sight on the target.

AMMUNITION SUPPLY.

The cartridges in the ammunition carts are not loaded in magazines, but are carried in the ordinary tins of 300 each, making in each cart 14,400 rounds. The supply is thus distributed:

	Per gun.	Per detachment.
On the 6 gun horses (400 each)	400	2,400
On the 2 or 3 ammunition pack horses (2,400 to 1,600 each) .	4,800	28,800
In 2 ammunition carts		28,800
Total available		60,000

or 10,000 rounds per gun, of which 5,200 rounds per gun are in the firing line.

COMMENTS ON THE MOUNTED GUN DETACHMENTS EQUIPPED
WITH REXER AUTOMATICS.

In spite of the fact that this weapon received no test in the late war, it may appeal to our cavalry as better suited to their wants than the more cumbersome Maxim with its water-jacket and tripod. The organization is also simpler and requires a little over four men per gun instead of about ten. The weapon is less effective than the Maxim, but it is more mobile, less training is required to use it, its methods of transportation are more easily adaptable to the existing cavalry equipment, and the reserve ammunition may all be carried on pack animals and special carts dispensed with. The Russian regimental detachment gives one Rexer gun per squadron of 120 men, while the Maxims are supplied to the infantry divisions at the rate of one gun per 2,000 men. For our service, detachments might be organized so as to give one Rexer gun per troop or four guns per squadron, which would make an excellent command for an energetic subaltern. The action of the Russians in adopting for their cavalry an organization and equipment so different from that of the infantry, which had experienced a war test while the other had not, is probably based on satisfactory proof of the suitability and power of the Rexer gun, and it may be wise for our cavalry to make trial of this weapon for comparison with that recently authorized.

CONCLUSIONS.

As the Rexer equipment received no tests in actual combat we are without data on which to base deductions relating to it; but as our cavalry are to have the same weapon as our infantry, namely, the Maxim, which is very similar to that used by the Russians in the war, we may draw certain conclusions and learn certain lessons which may prove useful.

1. The machine gun played a useful but not a great part in the war.
2. Two thousand yards was the limit of its effective battle range.
3. It could not contend against artillery.
4. Its average power is equivalent to about fifty riflemen

5. It is not a trustworthy weapon when used singly, and as a general rule should never be so employed.

6. Its most valuable quality is that it supplies a means of suddenly and unexpectedly increasing the volume of fire without overcrowding the firing line, thus greatly extending the scope and flexibility of the fire action.

7. Its greatest physical and moral effect is produced when it is employed suddenly against massed troops, such as infantry in close order, artillery limbered, cavalry mounted, or in enfilading lines of any kind. It is, in general, impossible to foresee when and where such opportunities will arise. Hence the best organization is that which distributes the machine guns among the fighting units so as to take instant advantage of an opportunity without making a good target for the enemy, the smallest permissible machine-gun unit being a detachment of two guns.

8. Machine guns should not be kept in the firing line, but held in reserve until the opportune moment arrives. They should on no account be permitted to fritter away their ammunition in doing work belonging to the firing line or which can better be done by specially detailed sharpshooters. The commander of a unit will fight his men with redoubled confidence if he feels that, at a critical moment, he has in hand an easily controllable means of instantly increasing his volume of fire by a company or more.

9. When the commander of a superior unit foresees that to accomplish certain results it is advisable to mass the gun, the small detachments may be united by his order and under his direction. There should be on the staff of every such chief an officer capable of taking command of the combined detachments. He should be a trained *mitrailleur*.

10. The value of the machine gun in defensive positions, covering defiles and the like, has been generally admitted. In reality it is equally valuable on the offensive or defensive to an active moving force which knows how to use it.

LESSONS FOR OUR SERVICE.

So far as our army is concerned, only negative lessons are to be learned from the Russian organization of machine gun

companies for use with infantry. At the outbreak of the war very little was known about machine guns in the Russian army as a whole, and, with this ignorance, certain erroneous opinions were prevalent, as with us under similar conditions, viz: that no special training was needed to handle these weapons, and that the personnel could be taken directly from the troops to which they were attached. The Russian authorities, however, took a serious and sensible view of the matter, and proceeded on the principle of not allowing machine guns to be handled except under the instruction of officers thoroughly schooled and competent. New companies were organized, with a nucleus of one or two instructed officers and thirty-three per cent. of well-trained men familiar with the weapon, the balance of the personnel being selected from the best men available in the units to which the guns were assigned. There was an armorer with each company who understood all the minor repair work needed.

While the arms and equipment of the personnel were the same as that of the troops with which they served, certain distinctive marks were added to their uniform, which made the men appreciate that their specialty was of some importance and permanence.

POLICY SUGGESTED.

From the above hints the following policy may be outlined governing the introduction of these weapons into our service, for it is believed that their reception will be decidedly lukewarm and their service inefficient for a long time unless every one is made to feel their importance *ab initio*.

1. Assign no officer to the command of a permanent detachment who is not thoroughly instructed and well posted on the handling of the gun, its care, methods of reducing "jams" and quickly remedying the ordinary accidents which are liable to occur; its transportation and the handling of the train and ammunition supply.

2. To make this possible, assemble at some central and convenient post a working board of instruction, composed of

officers from each branch of the line who have had the requisite experience, viz: An infantry officer who understands machine guns; a cavalry officer who has served on previous boards engaged in selecting the type suited to our service and testing methods of transportation; an artillery officer who has had similar duty—preferably from the mountain artillery. Appoint an ordnance officer who has had experience in the previous tests of machine guns, as *consulting member* of the board. Assign a skilled mechanic thoroughly familiar with the gun, one who fully understands its working construction and peculiarities, and also a skilled packer who shall be at the disposition of the board. The board should also have at its disposition a good typewriter as a recording clerk.

3. Select a central post where there is already pack transportation, and send there the enlisted personnel and selected officers from the first regiment to be supplied, and let them be instructed upon a program laid down by the board, which shall at once prepare a provisional system of drill regulations.

4. When the officers are sufficiently instructed, let them repair to their regiments with a copy of the provisional drill regulations and a suitable percentage of instructed men as a nucleus on which to organize the detachment for their regiment from the material which has been issued to it.

5. Let the provisional regulations be thoroughly tried out for a couple of years, inviting meantime reports and comments; let the whole system of tactical instruction be attacked, if desired, and thoroughly thrashed out, and then let the final revisions be made. It is unsafe to assume, as we have done, that boards are sufficiently omniscient to originate drill regulations complete and perfect, as Jove caused Minerva to spring at a touch absolutely flawless from his brain.

6. *Uniforms and Arms.*—Uniform, that of the unit to which attached, with distinctive insignia; arms, revolver of .45 caliber and a good stout machete of the best material and of approved design; intrenching tools (carried with ammunition packs), two spades and one pick mattock per gun.

Ammunition supply with the guns not less than 6,000 rounds per gun.

7. Let the board suggest a suitable set of distinctive insignia for the machine gun detachments.

These suggestions are thrown out because it is known to be an expensive and unsatisfactory policy to let inexperienced detachments go into the field. It will save time to give them the best instruction practicable, beginning with those who lead the list for foreign service, where there are no facilities for instruction.



"AN INTERESTING CASE TO HORSEMEN" CONTINUED.

BY CHAS. H. JEWELL, VETERINARIAN, U. S. A.

IN writing a reply to the above named article, I am not sure that I come under the head of a "first class veterinarian," whom Major Ripley desired to make some reply.

I do not wish to place myself on record as being an authority upon the subject of glanders, but since I have had considerable experience with this disease, both in the Philippines and the United States, I feel that I might possibly enlighten him upon some of the points of this disease upon which he seems to differ from our authorities.

During last August I was in attendance, by order of the War Department, at the annual meeting of the American Veterinary Medical Association, and it was my privilege to listen to several very interesting articles and discussions upon the subject of glanders in its various forms by men foremost in the veterinary profession of America, among whom was Prof. James Law, of Cornell University; Dr. J. G. Rutherford, Veterinary Inspector General for the Dominion of Canada; Dr. Geo. H. Berns, of Brooklyn, N. Y., and many others who have wide experience in sanitary control work, dealing especially with glanders. Dr. Rutherford mentioned cases of glanders which, when well advanced, would often fail to react to mallein, but which very often would show a decline in temperature. These cases he stated would, as a rule, have a well marked local swelling at the point of ejection. This along with the clinical symptoms, such as farcy buds and ulcers within the nostrils, etc., he considered confirmatory.

In the case given by Major Ripley he makes no mention of the presence or absence of any local swelling, which is considered of considerable importance in the mallein test, and nothing in the report of the test by the veterinarian is said in this regard.

The statement made by the Major is that authorities state that horses suffering from farcy often, when not showing any clinical symptoms, may show post mortem lesions of the internal organs. I can not find any author of repute making such a statement, but would refer the writer to Dr. Law's work on veterinary medicine, Vol. IV. In this book, which we of the profession refer to as authority, he states "that farcy is that form of glanders affecting the skin and subcutaneous lymphatics most prominently," and makes no mention of lesions of the internal organs, and in cases where the disease affects the internal organs and shows no external signs he classes as "latent or occult glanders."

As regards the inoculation of guinea pigs and making cultures from the small nodules. I can see no error in the methods described, yet it is a well known fact, that it is often difficult to obtain the glanders germ in taking pus from the discharge of farcy buds, owing to the great number of pus organisms present, which have greater power of reproduction and evidently destroy or render inert the glanders germ.

The symptoms given in the case strongly suggest farcy, and I am not aware that we have ulcerative or epizootic lymphangitis in this country, so we can exclude these diseases, which are so closely allied in symptoms to farcy. We occasionally have conditions resulting from infection of the lymphatics of the limbs, which often show considerable similarity to farcy, but one trained in animal diseases would hardly make a mistake of diagnosing such cases glanders; yet I have seen such cases which look enough like farcy to lead veterinarians of experience to resort to the mallein test before passing judgment upon them. I believe one should be guarded in making a positive diagnosis of glanders, until he has employed some of the confirmatory methods, and then, if these sustain his diagnosis, it leaves but little reasonable room for doubt. If in case of such an animal as the Major mentions we are in doubt, and time does not enable us to be positive, I believe it is better to sacrifice one animal than allow such a horse to mingle with healthy ones, and with the possibility of the case later proving to be farcy and becoming the means of infecting many others.

THE GERMAN MANEUVERS.

BY GORDON JOHNSTON, FIRST LIEUTENANT (CAVALRY) SIGNAL CORPS.

BERLIN, GERMANY, September 14, 1906.

The Chief, Military Information Division, Washington.

SIR:—I have the honor to inform you that I have recently attended the "Kaiser Manöver" which was held in Silesia near Breslau, from September 10th to 13th inclusive.

As I was not there officially, my opportunities for observation were necessarily limited, but such as they were I wish to bring them to your notice, hoping that they may be of some interest to your division.*

As you will doubtless have complete reports covering the general organization of the three army corps engaged, and the conduct of the maneuver, with able criticism of the strategy and tactics displayed, and the conduct, equipment and action of troops, I will confine myself to the minor matters which caught my attention.

Through the courtesy of Captain Biddle, our military attaché, in Berlin, I obtained a card which permitted me to visit all parts of the field of maneuver, so far as military interests admitted.

This was practically the "Press pass," and armed with this and provided with a bicycle, I was on the field by the 8th in order to look the ground over and familiarize myself with the field of operations.

At 2 A. M. on the 10th the two opponents were to commence operations, and as my interests were naturally with the cavalry, I went at once to the point where the hostile patrols would probably meet, and where they actually did.

*It is respectfully requested that this letter, after it has passed your office, be sent to the editor, UNITED STATES CAVALRY JOURNAL, for publication, if he considers it of sufficient interest.

From this time on I followed the cavalry as closely as possible, frequently getting out before daylight, and often losing them on account of night marches. This work was particularly interesting, for, knowing the general objective of the opponents, having a good map, and being able to locate the infantry before dark, it was a good problem to determine the probable whereabouts and actions of the cavalry.

As to their cavalry in general, their mount is excellent, their equipment is good and serviceable, the horses are beautifully trained and the men well disciplined. They travel fast and cover great distances. I followed their cavalry division many miles and never saw a horseshoe cast on the road, nor any part of horse or trooper equipment lost.

I noticed particularly the use of the double rein with which they are equipped, and did not observe any confusion of the reins or that the trooper had any difficulty in handling them under any conditions. As their right hand is always occupied by the lance they never use it on the reins, except in shifting them. In fact, the men carried their hands well down with a good feel of the snaffle and a light one of the curb. To bring a horse suddenly to a halt, they let the snaffle rein slide through the fingers and drew back the hand keeping a tight hold on the curb rein. They were again put in position by drawing the snaffle rein taut with two fingers of the right hand. As held in the hand, the snaffle reins are outside of the curb, all being separated by the fingers, the back of the hand being up, and the thumb pressing on them against the forefinger.

The four leather pouches, two by the cantle and two by the pommel, seemed an excellent arrangement to me. In the first place they permit an even distribution of the weight and carry at least as much as our saddle bags which place so much at the cantle end of our saddle, and under which we find about ninety per cent. of our saddle sores. Their saddle is good, lighter than ours, clears the withers as well, and permits of adjustment. Their saber hangs straight down on the left, and the carbine on the right, both attached to the cantle. This arrangement leaves the trooper's legs clear, which means a clean grasp of the saddle skirts all the way down. Every

one knows how uncomfortable the carbine and saber are under the knee or the lower leg. So far as I could see, the position of saber and carbine did not interfere with the action of the horse at any gait or in jumping fences or ditches. Many of the regiments had saddle-blankets like ours, only thicker.

The leather pouches, tightly secured to the pommel end of the saddle, give additional security to the seat, something like "bucking rolls." The rear pouches have also this effect.

When riding at full speed or across country the whole outfit seemed to ride close and tight, *i. e.*, all but the trooper, who bobbed up and down considerably. Their stirrups seemed too short, and this, with feet not parallel to the horse, turned the knee outward, showing daylight between it and the saddle, and also under the trooper. Their seat is so different from ours that it is hard to form a fair judgment of it. So far as results are concerned, however, they got across country in great shape and took their jumps very smoothly, without jerking the horses' heads off. On the march their walk is not very good, being slow, even then with some jiggering at the tail end. Their trot was steadier, but not covering the ground that our gait would. At the gallop they were splendid, sweeping along with a fine, free stride, up and down hill, across plowed fields or through high grass at a pace that fairly ate up the ground. This was doubtless due to the thoroughbred in their mount.

I cannot express my full admiration for these horses. They filled me with envy, and yet made the pulse of a horse lover beat very high. I have seen about 15,000 of them pass at Breslau and Berlin, and the foremost thing that struck me was the beauty and graceful carriage of their heads. All were rather small, beautifully shaped, with wide, flat foreheads, a straight frontal line in profile, small ears, large, full eyes, and thin, open nostrils. These horses were extremely intelligent, and their expression in the field indicated the keenest interest in the game, and the most willing response to every call on them. Although I saw many charges and counter-charges, *mêlées* and races in pursuit, I never saw a

single horse bolt or become unmanageable, and there were ninety five squadrons in the field in almost constant use.

The use of fire action was very limited. I saw only one instance in which troopers were dismounted, and heard of no other. They charge constantly with the lance, and may be counted upon to do so often and boldly. One particular instance impressed me very much. The Blue Cavalry Division was advancing along a main road toward Parchwitz which was held by the Red Division. There was only one road into the town, and this crossed a stream by a wooden bridge. It was here that the Reds had dismounted some cuirassiers to defend the bridge and the stream, which could not be crossed easily by the cavalry. The Blues sent several patrols against this line, and finally a squadron came at a full gallop down the road toward the bridge, with lances set, and an officer leading making frantic motions for the obstructions to be removed. This was done, and these passed over, followed shortly by the division. It was a splendid sight, but a sad fate awaited them. In columns of fours they swept through the town and up a steep hill, and just as they cleared the brow of the hill they found the Red Division in line, parallel to the road, and these promptly charged. The Blues were thrown into utter confusion, squadron and regiments all mixed, and troopers galloping in every direction. The rallying and re-forming of the Blue Division was far the prettiest piece of cavalry work seen by me. In an incredibly short time I counted the regiments galloping back through the village in the best order, and did not note a single uniform out of place. The leading units were moving off in this manner within a minute and a half (by the watch) after the charge of the Reds. Their uniforms being different for each regiment made this possible.

This impressed itself so forcibly on my mind that I began to wonder if there were no ways in which our own regiments could have some distinguishing color or mark to shorten such times of inevitable confusion, and to hasten the rally. Perhaps different colored handkerchiefs of the bandana size for the different regiments might help in this direction. These articles are very necessary in the field as well as orna-

mental in garrison, worn as a neck cloth, and perhaps would be of practical military use. If made of good fast color I believe they would fill an actual want. If invisibility is desired they can be very easily concealed in the shirt bosom or put inside the collar.

To return to the field work. I do not remember seeing ground scouts in front of any of their charging lines. Such scouts would have saved the Blues in the Parchwitz charge, for the Reds had made no preparation for fire actions, and one detachment could have blocked them in pursuit so as to give the Blues a start. They love the lance, and they have faith in the charge, so that if two columns should meet on a narrow road one may be sure of the action of a German squadron. If the columns are very much advanced and the position of the enemy not well known, it would not be advisable for the other to get separated from its horses, or even to dismount. Pistols could hardly be used in such formations, and the lance in such a clash would be a most formidable weapon. It would certainly seem that right here several men at the head of the column, who have horses which stand perfectly quiet under fire, could do some very fine work and then clear the road for a countercharge.

In patrol work they were very thorough but stereotyped, and did not simulate war conditions. For this reason it is difficult to form any opinion of what their screen and contest tactics would be like in actual war.

One thing did strike me very forcibly in the work of the Divisional Cavalry, and that was the certainty with which the presence of the infantry column and their line of march was indicated by the presence of these cavalry patrols on the same or a nearby parallel road, all moving in the same direction and in a more leisurely manner than if cavalry followed. Then with messengers riding back toward the same direction, the matter was assured. On several occasions this was observed at great distances, and a glance at the map would almost fix their destination. The idea of masking as well as protecting the march of infantry did not seem to prevail.

In the matter of equipment I had a good opportunity to notice the use of the officer's cape, which was cut quite wide. Two of the days were very cold, with both wind and rain, hard on men and horses. These capes were water-proof, and when in use covered not only the rider but the loins of the horse, extending over the croup. It must have been most beneficial to the horse, especially when he was alternately hot and cold.

As a whole, one must be impressed at these maneuvers with the perfect discipline and splendid endurance of the German troops. Their patrol work and long cavalry charges in the open, taking no heed of fire effect, and the use of dense masses of infantry in close range during the attack, would doubtless be speedily remedied in war. The other qualities are fundamental and very much to be admired.

It was also most inspiring to see such great bodies of troops. At the Breslau review there were 42,000 troops on the field. They were in two lines, the infantry being in front, with the cavalry and artillery in the rear. The dense column of the former in line of regiments, with a front of about 200 men, extended further than one could distinguish even companies, and melted into a solid mass, with only the little flashes from the bayonets or helmets to show what they were.

When the Kaiser, the great "War Lord," came on the field, they held the "Present" for twenty minutes, almost motionless. Nothing could be more picturesque than the cavalry, who sat their horses under a perfect forest of lances, from each of which a pennant fluttered; cuirassiers, dragoons, uhlans, and hussars, flanked by batteries of field guns, siege guns, field mortars and machine guns.

It was a great splendid machine, and it only impressed one the more to think that this was but a small fraction of the whole.

WANTED—SYSTEM.

BY CAPTAIN HOWARD R. HICKOK, FIFTEENTH CAVALRY.

COMPETENT authority has ordered that the duties of the general shall be studied, and maneuver camps in which large numbers of troops are gathered together have been formed. That such study is desirable and necessary no one will dispute. There is one fact, however, that is apparent to all those who attended the maneuvers of this past summer and which may be stated this way: Before learning the duties of General A, it is necessary to know those of Lieutenant B and even those of Private C. In other words, before we proceed to the study of the tactical campaign duties of general officers we must first learn those of subordinates. In order to accomplish this duty, a systematic progressive practical scheme of instruction must be followed.

Some study has been given to tactics in our garrison schools, practical exercises have been held on reservations, and practice marches have been made, all tending to give us confidence in our proficiency. As a consequence, our troops went to the various camps with the idea that the exercises to be held there were to be on the order of grand tactics—a fitting culmination for the year's practical work—and this idea is in accord with the general scheme of instruction. The exercises held did, to a certain extent, partake of the nature of a review or critical examination of the previous work at the posts, and revealed wherein such work was defective or fell short of expectations.

In the service there has arisen a feeling against theoretical instruction. This is a natural outcome of a disposition to criticise and find fault, of a repugnance to hard work, of a lack of appreciation of the limitations of theoretical instruction, of the difficulty of applying theoretical principles to practical use, and of the failure to accomplish desired results.

In the various exercises in minor tactics, it was evident that considerable attention had been paid to these duties in the garrison instruction. It was further evident that this instruction had frequently been of a perfunctory nature and that there had not been a uniform intelligent effort to apply principles to the various conditions imposed by the terrain and the supposed enemy.

A considerable ignorance of map reading and of the proper use of maps was observable. Uniform scales and contour intervals were frequently not understood nor their advantages appreciated. A well contoured map showing the military features was often criticised thus: "That map is sacrificed to contours." That an officer in command of troops in the field and supplied with a good map showing all the features should lose his road seems hardly credible. Yet, this was an observed fact. There was also a scarcity of officers and men competent in the rapid methods of sketching.

"Field orders" issued were frequently of such character as to indicate a lack of knowledge of the subject as outlined in Field Service Regulations, pamphlets and circulars that have been issued from time to time.

A great deal was heard about "normal formations," and they were attempted in numerous inapplicable cases. Commanders would form advance guard in accordance with the drill book models when such were clearly unsuited to the occasion. Other commanders would establish on diversified terrain, a "cordon system," or "Cossack post system," of outposts, failing to appreciate their inapplicability to the terrain under consideration, and being unconscious of the erroneous impression created by such exercises. In fact, so persistent was the misuse of "normal formations," as to lead to the conclusion in the minds of many officers, that such formations should be completely stricken from drill and text books, and drill in such formations absolutely prohibited.

The duties of patrolling, reconnoissance and screening were usually unsatisfactorily performed and this came about largely because of the improper conception of the duties of patrols. Reconnoissance is the chief duty of patrols. They should habitually seek safety in concealment or flight, avoid-

ing combat, and fighting only when absolutely necessary in the execution of their orders. Our men, however, instead of carrying out this idea would almost invariably engage in a fight.

Aggressiveness is a matter of temperament and is not a universal characteristic. It is a most valuable quality in a leader. Indecision, indifference and inactivity are, unfortunately, qualities that are more often present and are frequently induced by environment and the systems in which men find themselves placed. The years which officers spend in minor positions, with small opportunity to exercise their discretion, judgment and initiative, dwarf their mental growth and development and also their physical activity. The aggressive man, with even a poor plan which he pursues to a conclusion, will accomplish some results, whereas the undecided, indifferent, or inactive man rarely accomplishes anything at all.

In many of the maneuvers, conditions were frequently brought about where a perception of the situation, followed by an intelligent aggressive action, would have been productive of decisive results. In order that men may exercise and develop these qualities, it is necessary that they have frequent opportunity for such exercise. These opportunities can be created in the majority of military posts.

It is thought that in the garrisons a course of instruction similar in some respects to that pursued with excellent results in the Infantry and Cavalry School, can be used to advantage and as a preparation for the advanced work undertaken at maneuver camps. In this course, at least all captains and lieutenants, without exception, should be required to participate.

In general terms, the course could embrace the following:

1. (a) Problems in map reading.
- (b) Instruction in the rapid methods of sketching.
2. Instruction in the preparation of field orders.
3. Instruction by the applicative method in tactical subjects, beginning with security and information, as follows:

(a) Studies of solved problems or situations, illustrating the principles ordinarily laid down in text books.

(b) These studies to be followed by problems on the map. In these problems the student officer will apply the principles studied to new situations.

(c) These map problems to be followed by similar problems to be worked out on the ground itself but without using troops. These are called "terrain exercises."

(d) The map problems and terrain exercises in each subject to be followed by maneuvers with troops in those subjects.

In the applicative method of instruction, instead of studying and memorizing the bare abstract principles of a subject, as is done in the text book method, examples or solved problems are first examined, maps and diagrams being freely used. The reasons pro and con for all dispositions in each case are given. Nothing is ever heard of a "normal formation," for there is no such thing in this method. Instead, in each case such dispositions are made to meet the conditions imposed by the terrain and the supposed enemy as will best secure the desired results. Text books on theory are retained only for reference.

The advantage of this method is that the mind learns to apply theoretical principles to practical use in a way and with a thoroughness not otherwise obtainable. The mind is trained to think out military situations almost unconsciously to such an extent, that when a problem is actually presented, the solution is made at once without the indecision and inaction that is so often observable.

In order that errors may be known at once and avoided, the corrected papers, with criticisms thereon, in map problems, should be returned to the officer as soon as practicable and before proceeding with the next part of the course. Similarly, in the terrain exercises, the corrected solutions are returned to the officer and the problem is discussed on the ground.

The course in security and information having been completed, more advanced tactics of the student officer's arm of

the service should then be taken up, the tactics of other arms being also studied in this connection.

Each officer should have the opportunity to exercise command in each problem of the course in maneuvers, problems being, if necessary, repeated for this purpose. The opportunity to command should extend at least to include the unit next higher than that appropriate to the officer's grade.

Exercises without hostile combat are matters more of drill than of maneuver, preparing the way for the latter. With the knowledge that an enemy may be encountered, the commander will be more alert and the correctness of his dispositions will be tested.

In maneuvers, the usual rules should apply. The following should be especially considered. The maneuver should be followed by a discussion in which all officers engaging should take part. The commander of each side should be given the opportunity to explain his plan, dispositions and operations, as well as required to indicate any errors that he believes he has committed. The supervising officer should point out any defects of plan or execution, or other errors, and indicate what would have been a better course of action. Opposing commanders will be apt to want a decision that they "won" or that the other side "lost." Such decisions defeat the object of the exercises. It is obvious that if a patrol operates against a regiment, any combat of these two bodies should result in favor of the regiment, and yet the patrol may have been successful in its mission. The decision of the supervisor should be on the question: "Have the conditions for success been fulfilled?"

A variety of maneuvers can be arranged, such as patrol against patrol; advance guard against advance or rear guard; retreat and pursuit; reconnoissance, one organization against one or more; outpost duty with reconnoissance by hostile patrols; attack and defense of outpost, of position, of convoy; problems involving the three arms, and so forth. The exercises would be different for different garrisons, depending upon the number and grade of the participating officers and upon the available troops and terrain.

The system here proposed requires that the enlisted man be thoroughly instructed in drill, fire discipline, and in security and information.

In order to accomplish its enforcement, this system of instruction requires that in each post the instructor or supervisor shall be a competent officer, having knowledge of the system and possessing zeal in the work. It is thought that this condition can be met in at least the larger posts, if not in all.

An objection may be raised that this system will involve much work. The system will require more work of the instructor than in the present method. No work is too hard, if results be commensurate, and if properly applied this system will produce these results. The work will be no harder than that supposed to have been heretofore expended on garrison schools. From its very nature, it is of a more interesting character, and the interest aroused will act as a stimulus to excel.

The solved problems or situations to be studied by student officers, and also those problems to be solved by them, would have to be carefully prepared. Present regulations assign this duty to the War College. Part of this duty would have to be performed in the garrisons by the instructors, or by boards designated for that purpose.

The question may arise, "How will uniformity of instruction be assured throughout the service?" It is possible that some commanding officer may not make a thorough, consistent, conscientious application of the system, and may throw obstructions in its way. A system of inspection under direction of the War College would probably insure a proper enforcement of the system.

THE FORT RILEY CAMP OF INSTRUCTION, 1906.

BY FIRST LIEUTENANT EDWARD DAVIS, ELEVENTH CAVALRY.

DURING the short period that the United States army has enjoyed the advantage of field training on a large scale, many different names have been used to designate the great maneuver camps, but it is doubtful whether any camp ever so completely justified its name in every respect as did the camp maintained this summer at Fort Riley, Kansas, and known simply as a "Camp of Instruction." The foresight displayed in administrative preparation, the scope, logical arrangement and general excellence of the program of instruction, the zeal, energy and intelligent coöperation which characterized the efforts of all—officers and men, line and staff, regulars and organized militia—these were the elements that contributed to make this camp so remarkably successful. In addition to this happy application and coördination of human effort, the camp was characterized by certain material features which served to stamp its memory indelibly upon the minds of those who participated. The terrain was satisfying in its adaptability to the problems attempted, the weather on the whole, was fine, and the sanitary condition that prevailed thruout was a wholesome object lesson and a cause for common congratulation.

In so far as the mind of man operated to bring about these results, we may hark back to the period of preparation preceding this camp and there find some of the causes of success. Early in May the War Department intimated that camps of instruction might be a feature of the summer's training, and in June this possibility became a certainty by the issuance of General Orders No. 110, War Department. This order fixed the dates, sites, commanders and troops for the different camps, and included certain general directions

as to the supervision to be exercised by division and department commanders with reference to the establishment and maintenance of the camps and the concentration and dispersion of the participating forces.

An important feature of this general order was its noticeable omission of any set program of instruction to be followed by all camp commanders alike, and its direction to the effect that "the program of instruction to be pursued and the arrangement of all necessary details, within the limits here prescribed, are left to the respective division, department and camp commanders." By this clause of the order, there was created a competition among the commanders designated, which necessarily must have resulted in a certain measurement of comparative fitness for high command. This clause of the order will result also in giving to the General Staff a variety of programs of instruction—all the result of considerable study, from which to select those elements found most beneficial and practicable, and out of which to construct a general scheme of field training for the entire army and organized militia. A comparative study of the programs followed this summer at the different camps, leads one to the conclusion, that the scheme carried through at Fort Riley must be given very serious consideration as being possibly quite fit for adoption, almost in its entirety, as a model to be followed hereafter in all camps.

Following the publication of General Orders 110, War Department, came quickly, letters of instruction and orders from Division and Department Headquarters, designed to cause the troops at all posts to take on a condition of preparedness in every respect, so that the appointed day might find all perfectly fit and completely equipped for the long march to the site of the camp. To attain this result with the troops of the regular establishment but little effort was necessary, as the practice marches accomplished under General Orders 44, War Department, 1906, had already put the various commands into most acceptable condition. To impress upon the organized militia the need for careful preliminary study and preparation, and to assist them in matters

of arranging transportation and subsistence, constituted another phase of the preparatory period. The selection of staff officers, the concentration of supplies at the camp site, and the preparation of important general orders, relating to administration, instruction, discipline, sanitation, etc., ready for issue on the opening day of the camp, were among the responsibilities of the department and camp commanders during the preparatory period.

Upon the arrival of General Wint and his staff on July 25th, the camp at Fort Riley was regularly established, and the necessary orders were issued for the organization and administration of the troops in the camp as a provisional brigade. The component troops of this brigade, with strength, dates of arrival, etc., are shown in the table below:

REGULARS IN CAMP.

Organizations and Detachments.	Officers.	Enlisted Men.	Guns.	Horses.	Train.	Date of Arrival.
Brigade Headquarters and Staff	30	4	.....	.....	.....	July 25
Med. Dept. and Hosp. Corps	11	132	.....	52	8	July 29
Signal corps, Co. A	1	46	.....	23	4	July 23
Engineer Corps, 3d Battalion	9	300	.....	91	6	July 23
Second Cavalry, 2d Squadron	9	240	.....	281	4	July 15
Ninth Cavalry, F. B., 1st Squadron	15	265	.....	308	6	July 29
Ninth Cavalry, 2d Squadron	6	267	.....	323	9	July 26
Eleventh Cavalry (entire)	23	621	.....	703	30	Aug. 19
Thirteenth Cavalry, F. S. 1st Squad.	8	225	.....	281	5	July 29
Prov. Regt. Field Artillery, Field & Staff	6	1	.....	7	.....	July 28
FOURTH BATTALION.						
2d, 22d, 25th Batteries.	8	261	12	339	6	July 28
SEVENTH BATTALION.						
Tenth and Thirtieth Batteries	7	174	8	216	5	July 28
Twenty-ninth Battery	2	90	4	128	2	July 26
FIFTH BATTALION. F. A. (Horse.)						
Seventh and Twentieth Batteries	8	197	8	314	5	July 28
NINTH BATTALION. F. A. (SIEGE.)						
Eleventh Battery	2	115	4	98	.....	Aug. 13
Sixteenth Battery	2	113	4	102	.....	July 28
Eighteenth Infantry	30	908	.....	.....	19	Aug. 1
30th Inf. F. S. B., 1st and 3d Bat.	20	415	.....	.....	12	July 30
30th Inf., Second Battalion	9	198	.....	.....	5	Aug. 4

In addition to the above noted regular troops, the organized militia of the Middle Western States sent detachments as follows:

Organizations and Detachments.	Officers.	Enlisted Men.	Guns.	Horses.	Date of Arrival.	Date of Departure.
Neb. Nat. Guard, Hdqrs. and S. . .	6	3	...	10	Aug. 2.	Aug. 12.
Ambulance Co.	3	41	...	3	...	...
Signal Co.	3	37	...	3	...	...
Cavalry . . . . .	...	3	...	3	...	...
Artillery, Field	3	26	2	25	...	...
First Infantry	42	489	...	11	...	...
Second Infantry	42	529	...	12	...	...
Hastings Rifles	2	28	...	...	...	...
Total strength	101	1156	2	67	...	...
Ark. Nat. Guard, Regt. Inf.	55	703	...	...	Aug. 10.	Aug. 19.
Kan. Nat. Guard Hdqrs. and S. . .	9	6	...	...	Aug. 15.	Aug. 27.
Artillery, Field	3	46	...	3	...	...
First Infantry	53	547	...	...	...	...
Second Infantry	53	496	...	...	...	...
Total strength	118	1095	...	3	...	...
S. Dakota Nat. Guard, H. and S. . .	1	...	...	...	Aug. 16.	Aug. 27.
Fourth Infantry	25	268	...	...	...	...
Total strength	26	268	...	...	...	...
Mo. Nat. Guard, Hdqrs. and S. . . .	7	...	...	...	Aug. 26.	Sept. 1.
Artillery Detach. . . . .	...	19	...	...	...	...
Second Infantry	48	492	...	...	...	...
Third Infantry	44	435	...	...	...	...
Fourth Infantry	43	369	...	...	...	...
Total strength	142	1315	...	...	...	...
Iowa Nat. Guard, Hdqrs. and S. . .	17	36	...	...	Sept. 3.	Sept. 9.
Hospital Corps . . . . .	...	15	...	...	...	...
Fifty-sixth Iowa	33	520	...	...	...	...
Total strength	50	571	...	...	...	...
Oklahoma Nat. Guard . . . . .	...	...	...	...	Sept. 23.	Sept. 30.
Engineers	1	38	...	...	...	...
Signal Corps	3	29	...	...	...	...
Hospital Corps	3	17	...	...	...	...
First Regiment	45	494	...	...	...	...
Total strength	52	578	...	...	...	...

The maximum strength of the regular troops in the camp was 206 officers and 4,572 enlisted men. The maximum strength of the entire command, including the organized militia, was 405 officers and 6,638 enlisted men, this figure being attained on August 17th, when the organized militia of

the States of Arkansas, Kansas and South Dakota formed a part of the command. In all, from the beginning until the end, including regulars and organized militia, 11,008 officers and men had attended the camp.

With the exception of Company K, Third Battalion of Engineers, the Second Squadron Second Cavalry, the Eleventh Regiment of Cavalry and the Fort Riley Artillery, all of the regular troops marched practically the entire distance from their respective home stations to the camp site—the cavalry and artillery averaging 250 miles, and the infantry averaging about 200 miles. The march of the Second Battalion Thirtieth Infantry from Fort Reno, a distance of 336 miles, deserves special mention.

This preliminary marching period was of the greatest benefit. It tested the quality of every sort of equipment and article of clothing and exposed many defects which, before the days of such marches, would probably have remained undiscovered until aid bare, too late, by the stress of actual war. The marching shoe, the infantry equipment, the cavalry pack, and every sort of light camp equipage was put thru a thoro trying out. Men and horses were tested as to their marching capacity, and rations and forage were made the subjects of experiment, both as to their sufficiency and as to their portability. These marching commands profited also by the hardened condition in which they entered the instruction at the camp. The people of the cities and of the country-side traversed by these marching columns were given the privilege of observing and coming into contact with the Regular—a stranger to most of them. In these marches, as always, the regular troops conducted themselves with a high degree of self-respect, reinforced by splendid discipline and set off by an appearance significant of military fitness.

In preparing the detailed scheme of instruction for this camp it was necessary to base the program upon the requirements of General Orders No. 110, War Department, 1906, which announced:

“It is the purpose of the Department in carrying out the scheme of instruction outlined in this order, to approximate

on the march and in camp, as nearly as may be, the conditions of field service in time of war. The flooring of tents and the like semi-permanent arrangements, are therefore not authorized. And as the object is to harden the troops and perfect their field training, the maximum of drills, exercises and problems looking to that end is enjoined, together with the minimum of formal ceremonies and a total absence of merely spectacular exhibitions."

Being given the idea, "field training under war-time conditions," as a key note, it was necessary to consider the proper division of the two-months program into periods, the nature and sequence of the periods and the size of the elements selected for separate instruction, with a view to making the program progressive and logical. It occurs to one that perhaps our maneuver camps ought to include no instruction by troop or company, or by battalion or squadron, on the ground that these elements find their field and period of instruction on the drill ground at the home station—and that the regimental exercise should be the beginning of the tactical instruction in the great camps. However, according to some authorities, this idea fails in practical application, because of the fact that inspections and observations show that not all companies, troops, battalions and squadrons come to a maneuver camp with a degree of tactical instruction which can be pronounced satisfactory. Hence it is said that these smaller elements ought to be instructed as such in the earlier days of each period, in order that the regimental, brigade and divisional exercises may proceed with a smoothness possible only when the lesser elements are perfectly trained. Doubtless, as we progress with our camps of instruction from year to year, and as our system of garrison training becomes more exacting, poor companies and troops and poor battalions and squadrons will disappear and we shall see no more of the smaller exercises in our great training camps.

The Fort Riley program of instruction for the regular troops was divided into five periods, covering the months of August and September, 1906. The first period included nine working days—August 1st to August 13th—and was

devoted to "Formations for Attack and Defense," progressing from the company to the division. A feature of this period was the exercise of August 13th, when the entire command, constituting a "Brown Army" commanded by Colonel Geo. S. Grimes, Artillery Corps, effected, with creditable smoothness and great rapidity, a disposition to meet the attack of an imaginary "Blue Army," the operation centering in the neighborhood of "Morris Hill."

The second period was devoted to "Dispositions for the Security and Information of Troops on the March," and extended from August 14th to August 24th, including nine working days. This period was marked by earnest work in the rapid formation and effective maintenance of advance, flank and rear guards, these exercises advancing from the company to the division.

The third period was assigned to "Dispositions for the Security and Information of Troops in Camp or Bivouac," and extended from August 27th to September 6th, eight days being available. Outposts of every size and variety were formed under varying circumstances over a terrain affording splendid opportunities for the display of knowledge and skill in this particular branch of military effort. Those who know the highlands of Fort Riley, with their great stretches of rolling country cut by deep cañons and fringed by the flats of the river country with its growth of tangled timber, can appreciate the opportunities here presented for the soldiers' exercise in all the phases of "Security and Information."

The fourth period extended from September 10th to September 30th, and was devoted to "Problems." The program of instruction, as originally announced, set aside the fourth period for "Marches," but owing to the departure of the Eighteenth Infantry and the Second Squadron, Ninth Cavalry for Fort Leavenworth, the marching exercises were omitted and the fourth and fifth periods were consolidated into one "Problem Period." The entire command came to this period with the same expectancy, zeal, dash and mental and physical fitness that characterize the finished college athlete when he toes the scratch for the final dash at the

"inter-collegiate meet." All arms were trained to the minute. Long held in check by the unsatisfying, though essential exercises in non-contact, non-competitive problems, with sense of realism half famished by the restricted diet of blank ammunition, and with the "esprit de corps" whetted in each arm by the clash of comment in the "assembly tent," foot, horse and cannon felt fit to feature this final period by a series of record breaking achievements.



CAVALRY PATROL IN THE HILLS.

The limits of this article will not suffice properly to describe, or even mention, all of the interesting and excellent problems presented by the Brigade Chief of Staff and so satisfactorily solved by the command. Among those of particular interest may be mentioned the problem of September 18th, which provided for the attack and defense of the Union Pacific Railroad Bridge at Fort Riley; this point

upon the line of communication of a "Blue Army," being guarded by Captain Stephen H. Elliott, Eleventh Cavalry, who, with a fellow commander of another force from the same "Blue Army," Major Abercrombie, Thirtieth Infantry, was attacked by a "Brown force" commanded by Lieutenant Colonel Parker, Thirteenth Cavalry, who sought to beat both the Blue forces but finally threw the bulk of his strength into action against the force near the bridge. The general and special situations, the reports of the commanders and the report of the chief umpire are set forth below:

THE PROBLEM.

HEADQUARTERS PROVISIONAL BRIGADE, CAMP OF INSTRUCTION, FORT RILEY
RESERVATION, KANSAS.

September 16, 1906.

MEMORANDUM FOR INSTRUCTION No. 42.

The following problem is prescribed for Tuesday, September 18, 1906.

General Situation.

A Blue army from Missouri has occupied Kansas and is holding among other points, Manhattan, Union Pacific Railroad bridge at Fort Riley, and Abilene, to guard its line of communication. The country is bitterly hostile and alive with Brown cavalry.

Note: The post and camp of instruction are assumed to be impassable ground, and will not be entered by the troops.

The operations of the problem will be confined to the reservation.

Company A, Signal Corps, will be on duty with the umpires and carry out the instructions of the chief umpire.

Troops not taking part in the problem may remain in camp. Officers not participating may attend as observers.

Commanding officers will prepare an estimate of the situation to be read at the discussion.

Special Situation, Blue.

The Eleventh Cavalry with Twentieth Horse Battery and Detachment Hospital Corps attached, Captain Stephen H. Elliott, Eleventh Cavalry, commanding, camps on the athletic field night of 17-18 September, 1906, relieving the Second Battalion, Thirtieth Infantry, Major Abercrombie, Thirtieth Infantry, commanding, from its guard of the Union Pacific Railroad bridge.

At 8:30 A. M., 18th September, the infantry starts for Manhattan via Ogden.

Note: Captain Elliott will cause his command to be in shelter tent camp on athletic field with outposts established at 9:30 A. M., when the problem will begin.

Major Abercrombie will cause his command to be on Sheridan Bluffs road, with leading element at junction of trail to Morris Hill by 9:30 A. M., when the march toward Ogden will be resumed, and the problem begin.

Special Situation, Brown.

The Provisional Cavalry Regiment, with mounted section Engineers, Seventh Horse Battery and Detachment Hospital Corps attached, Lieutenant

Colonel James Parker, Thirteenth Cavalry, commanding, bivouacs near Packers camp night of 17-18 September, 1906. During the night an inhabitant of Junction City informs the Brown commander that a cavalry regiment and a horse battery have just arrived at Union Pacific Railroad bridge to relieve the three companies of infantry stationed there, who are to march to Manhattan via Ogden to-morrow morning.

At 9:00 A. M. and officer's patrol reports that the infantry companies left the bridge about 8:30 A. M., and are moving northeast along the high ground bordering the left bank of the Kansas River.

Note: Lieutenant Colonel Parker will have his command east of Three Mile Creek by 9:30 A. M., when the problem will begin.

REPORT OF CAPTAIN STEPHEN H. ELLIOTT, ELEVENTH CAVALRY, ON OPERATIONS OF BLUE DETACHMENT.

September 19, 1906.

From the conditions of the problem my understanding of the situation was as follows:

That the first duty of the detachment under my command was to protect the Union Pacific bridge from molestation by the Brown forces.

That, under the conditions of the problem, the two fractions of the Blue force were to act independently, as owing to the distance between them and the intervening obstacles at the time the problem began, neither need expect assistance from the other.

In accordance with the estimate I issued the following order:

HEADQUARTERS ELEVENTH CAVALRY, ATHLETIC FIELD FORT RILEY, KAN.

18 September, 1906, 6:00 P. M.

FIELD ORDERS, }
No. 1. }

TROOPS.

Outposts.

Second Squadron, Eleventh Cavalry.

Main Body.

First Squadron, Eleventh Cavalry, less bridge guard.

Third Squadron, Eleventh Cavalry.

Twentieth Battery, F. A. Horse.

Detachment Hospital Corps.

Bridge Guard.

One officer and ten men, Troop D, Eleventh Cavalry.

1. The whereabouts of the main body of the enemy is unknown, but the country in this vicinity is reported overrun with his cavalry. The hostility of the inhabitants is evident.

The duty laid upon this detachment is to guard the Union Pacific Railroad bridge, relieving the Second Battalion, Thirtieth Infantry. The regiment will, therefore, encamp on the athletic field and establish an outpost line on the heights to the north.

3. (a) The Second Squadron Eleventh Cavalry will constitute the outpost. The squadron commander will establish a line of Cossack posts on the commanding points of Reservoir Hill and Sherman Heights closely backed up by supports. The outpost reserve will be stationed at the junction of the trails leading to Reservoir Hill and Sherman Heights and the Milford Road. It will be in constant readiness to move to the assistance of any part of the outpost line. Pump House Cañon with its tributary ravines, One Mile Creek and Governor Harvey Cañon will be constantly reconnoitered by officer's patrols.

(b) The main body will remain in camp, but upon the first report of the enemy's approach will break camp and prepare to move with the least practicable delay.

(c) A bridge guard to consist of one (1) officer and ten (10) men of Troop D, Eleventh Cavalry, will be in immediate charge of the Union Pacific Railroad bridge, and will prevent its being tampered with by any patrols of the enemy who may use the bed of the river or the timber on either bank as lines of approach.

4. The detachment commander will be with the main body.

By order of Captain ELLIOTT,
E. SWIFT, Jr.,
First Lieut., Squadron Adjutant,
Eleventh Cavalry,
Acting Adjutant.

Copies to Unit Commanders.

At 8:30 A. M., September 19th, the Eleventh Cavalry, with the exception of the Second Squadron, detailed on outpost, was in shelter tent camp on the athletic field. The Twentieth Battery was in camp by 8:50 A. M. The Second Squadron was instructed to complete the posting of the outpost line and have the patrols ready to start by 9:00 A. M. These instructions were carried out.

At 9:55 A. M., the presence of six platoons of Brown cavalry was reported on the Reservoir Hill. The message was oral, brought by an enlisted man and was garbled in transmission. However, without waiting to verify the report, camp was struck, the command left the athletic field at 10:15 A. M., and moved out on the Milford Road, halting a little east of the Pump House.

As the front of my outpost line was broken by Pump House Cañon into two sections, and the lateral communications were none of the best, the trails up Reservoir Hill and Sherman Heights being rough and not suitable for rapid movement, I had previously consulted with the battery officers if there was a position on either Reservoir Hill or Sherman Heights from which the battery could be used efficiently against an advance against either of our flanks, and was informed that Reservoir Hill fulfilled this requirement. I therefore ordered the Twentieth Battery into position on this point without awaiting any further developments.

At 10:45 A. M. information was received that Brown scouts and two platoons of Brown cavalry were moving northwest along Saddle Back.

At about 11:00 A. M. firing was heard at the Union Pacific bridge, and I sent Troop D to reinforce the bridge guard, if assistance was necessary, and to return if it was not. It proved to be the attempt of a Brown patrol to reach the bridge. This was frustrated by Lieutenant Dickman in charge of the bridge guard.

Word having come in from the outpost that the Brown scouts were visible north of Sherman Heights, and seemed to be working in that direction, I directed the outpost reserve to reinforce that flank of the outpost line. This movement was completed by 11:30 A. M.

At 11:17 A. M. information was received that six Brown troops were moving along the western boundary of the reservation, against our left flank. At

11:25 A. M., and before they could be reinforced, the left of the outpost line was driven in by a Brown dismounted attack. The posts and supports fell back upon the reserve, delaying the Brown advance as much as possible by dismounted fire action. Having joined the reserves, the Brown advance was checked by the fire action of the combined force. I immediately ordered the First Squadron to their assistance.

At 11:40 A. M. information was received from the officer's patrol in Governor Harvey Cañon that a strong force of Browns was pushing rapidly down the Cañon. Anticipating a mounted rush for the bridge on the part of



COMMANDING GENERAL AND STAFF OFFICERS VIEWING THE OPERATIONS.

the Browns from this direction, three troops of the Third Squadron were dismounted under cover of the Pump House, and a line posted between the Republican River and the bluffs facing west, abreast of the target range.

I then proceeded to Sherman Heights, arriving about 11:55 A. M., and found five troops in firing line confronting the Browns, and two troops mounted waiting for orders. These latter were sent to the right flank under Captain Leary to gain a position on the Brown left, if possible, to enfilade their line. This movement was not completed before the termination of the

problem. Two guns of the Brown battery were located and subjected to rifle fire.

At about 12:20 P. M. Troop F, Lieutenant Swift commanding, made a dismounted assault against the Brown left, but was ordered back by the umpires.

At 12:30 P. M. the recall was sounded.

During the problem the battery did not come into action. This the battery commander stated was due to lack of objectives.

Respectfully submitted,

S. H. ELLIOTT,

Captain Eleventh Cavalry,

Commanding Blue Detachment.

LIEUTENANT COLONEL PARKER'S REPORT AS COMMANDER
OF THE BROWN FORCE.

HEADQUARTERS PROVISIONAL REGIMENT OF CAVALRY, CAMP OF INSTRUCTION,
FORT RILEY RESERVATION.

September 19, 1906.

Adjutant General, Provisional Brigade.

SIR:—I have the honor to make the following report of the operation of the Brown force in the maneuver of to-day:

* * * * *

My combined force moved out at 9:30 A. M., moving up Saddle Back Ridge, keeping behind cover. At 9:40 A. M. I received information from an officer's patrol that three companies of infantry (Blue) were on high ground near Sheridan Bluffs.

Major Slocum immediately placed two guns on high ground on Saddle Back Ridge and with his cavalry proceeded up Southwest Cañon, where he was fired upon by the enemy's advance scouts. His troops deployed and took up a defensive position, as shown on map, where they held this force in check, using the artillery to bombard his position. The infantry were held and prevented from going back to reinforce the cavalry until the end of the problem.

Communication was preserved between Major Slocum's command and my own by means of scouts.

In the meantime, the main force of the Brown cavalry, under my command, moved up along Three Mile Creek, passed Saddle Back, thence westward, keeping under cover from Morris Hill at all times; passed Estes Road thence to Harvey Road.

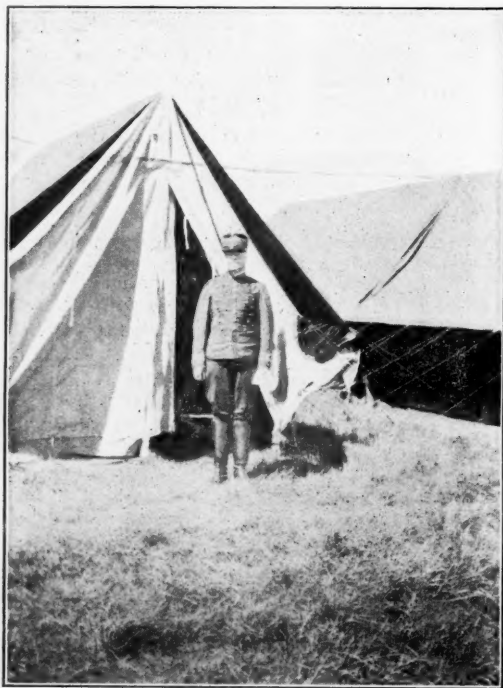
Arriving at a point about one mile from "Hill 1332," a trot was taken and the advance guard moved ahead and occupied this point, on which two guns of the artillery were immediately placed in position, commanding the artillery position at the west end of Sherman Heights.

It was supposed that the combat on the right flank of the enemy would attract his attention in that direction, and this proved to be correct. My cavalry moved ahead and seized the west end of Sherman Heights, driving back a small body of the enemy's infantry to the ridge beyond this position, which was intrenched by part of the engineers and occupied by five troops of cavalry, two troops having been left to insure the safety of the artillery at Hill 1332.

This position being assured, the artillery was brought forward, moving under cover, and all went into battery on a ridge to the right and rear of the cavalry position, where it was screened from the fire of the opposing cavalry, but had a beautiful command of the railroad bridge at a range of 3,000 yards, and also commanded the low ground along the base of Sherman Heights.

The horses of a number of troops of cavalry were on this ground and were fired into with great effect.

The battery also kept up a continuous fire on the Union Pacific Railroad bridge, using for this purpose explosive shell, disabling the bridge for railroad communication.



A FOREIGN ATTACHÉ.
LIEUT-COL. A. DE PEDERNEIRAS, BRAZILIAN ARMY.

In the meantime, the enemy sent numerous troops to reinforce the line in front, also detachments to threaten our line on the left flank; these detachments were opposed by Lieutenant Buchanan's troops, which operated mounted on our left.

Our position was impregnable except by a very large force, and the ruin of the bridge would have been accomplished. This accomplished, it was my intention to move back towards Morris Hill and Sheridan Bluffs and complete the destruction of the infantry force, but recall was sounded at 12:00 M.

The wagon train of the Thirtieth Infantry crossed our line of march during the problem and were mistaken for the enemy.

The patrols of Lieutenant Holderness and Sergeant Fleming penetrated through the lines of the enemy, leaving their horses concealed. They arrived so close to the bridge that bombs could have been thrown by hand. Lieutenant Holderness reports that he was captured ten feet from the bridge; Sergeant Fleming got within twenty-five yards of the bridge, but was not captured before recall.

Very respectfully,

JAMES PARKER,
Lieutenant Colonel, Thirteenth Cavalry,
Commanding Brown Forces.

VERBAL REPORT OF MAJOR WILLIAM R. ABERCROMBIE,
THIRTIETH INFANTRY, COMMANDING BLUE
BATTALION OF INFANTRY.

(From Stenographer's Notes.)

At 9:30 I was at the junction of these two roads and my battalion consisted of three companies. The object of the problem was not definitely understood at that time. At 9:30 we moved down with Captain Nolan in command of the van guard, Captain Shaw in command of the main body, and Lieutenant Lawton in command of the rear guard. After having moved down this road probably a mile and a half to this point (indicating) we encountered the scouts of the Browns coming over the hill; those we drove back, followed them up to this point here, and down in this ravine (indicating); we discovered, I think, ten troops and two guns. Three of these troops remained and two guns, and the rest of the command moved forward. We delivered a fire on these troops at from 600 to 800 yards, when the battery moved out and took position here right across, about 1,000 yards. Then one troop, G, moved over this crest and came around back of us here, when we detached a part of G Company and drove them off. Captain Shaw went on to this point, here (indicating) and with a portion of his company came down through this gulch and fired on the lead horses, which were ruled out for thirty minutes. On receiving his report that the lead horses had been ruled out, my intention was to cross down here (indicating) and move over by the packers' camp, but on consultation with the officers of the command, we thought it best to remain here and hold these troops out of action, as we then conceived the problem to be a cavalry action of the Browns against the Blues. We judged the forces to be about equal, and by holding these troops in check here we would probably make a lighter action for the Blues over at the bridge.

I got a telephone from the chief umpire, asking me what I intended to do and I wired back that we would wait for the cavalry. This battery here after having been fired on down here from 600 to 800 yards, withdrew to this knoll 1,000 yards from this point (indicating), and was under fire there for seven minutes by E Company of the Thirtieth, which has a record of eighty per cent. of hits in collective fire from 600 to 1,000 yards. We considered these two guns out of action when recall sounded, and could have continued enroute but waited to hear from the cavalry action.

REPORT OF COLONEL E. D. THOMAS, ELEVENTH CAVALRY,
AS CHIEF UMPIRE.HEADQUARTERS PROVISIONAL BRIGADE,
September 19, 1906.

The situation at the commencement of this problem was as follows: A Blue army from Missouri had invaded Kansas and was holding a railroad as its line of communication between several Blue detachments, which had possession of Manhattan, Fort Riley and Abilene. It was important that the railroad and the bridge over the Republican River should be protected and kept intact if possible, and it was the duty of the Blue commander to see to this under all circumstances, and use his force accordingly.

The country was bitterly hostile and overrun with Brown cavalry, strength not known.

The withdrawal of the Blue infantry from the vicinity of the railroad bridge, and the sending of this same body of infantry along the line of the railroad towards Manhattan was in the nature of an expeditionary force, to disperse hostile Brown patrols and Brown detachments, which force, in conjunction with the hostile inhabitants of the country, could, if unmolested by Blue forces, cause considerable damage to the line of supply. It was, therefore, necessary that the infantry column should push through to Manhattan if it were possible to do so. If it were not possible to do this, then gradually to fall back and form under the protection of the bridge guard of cavalry and artillery.

The capture or destruction of the bridge, or driving off of the cavalry guard was unsuccessful. The lead horses of one Blue squadron were very much in evidence on the Republican River bottom, exposed to the fire of Brown cavalry.

As a matter of fact, one squadron of Blue cavalry was on the Republican River bottom dismounted and concealed under the shade of the sheltering sunflowers (so fortunately at hand at critical moments, as heretofore mentioned in some of these exercises) waiting for that mounted action which was undoubtedly in the mind of the Blue commander to be expected but did not materialize. An explanation of this squadron's position is to be found in the conveying of erroneous information to the Blue commander by officers' patrols. It is well to remark here that accurate information by patrols is what a detachment commander is most anxious to obtain at all stages of the problem.

The capture of Hill 1332 by the Brown cavalry was well executed, and the movement towards the commanding point on Sherman Heights was the next stage of the day's program in the mind of the Brown commander. This point was occupied by a troop of Blue cavalry dismounted, which was forced back to the next hill east. Being reinforced by three troops, it was able to hold its ground and could have, with the reinforcements just arriving, driven the Brown force towards Governor Harvey Road and prevented the Brown battery from going into action at a favorable point. The Brown battery (two guns) opened fire one thousand yards from the dismounted opponents, supposedly at the bridge. This battery was under the dismounted fire of five troops of cavalry. It could not have remained long in this position, and it is doubtful if its fire on the bridge would have done any damage.

COMMENT.

The march north and west by the Brown cavalry was expeditiously made and skillfully conducted. The column was kept well concealed nearly the entire march. Once it was in plain view for some little time and would have been subjected to some loss by the fire of the battery with the Blue cavalry. But as this battery did not fire at all it escaped casualties that otherwise would have occurred. * * *

The orders of the squadron commander confronting the infantry battalion that was marching to Manhattan, were to hold this detachment and not let them (after he had developed the position) advance or return to the Blue cavalry command.

The instructions to the Brown squadron commander should have not been so imperative. It is thought that more latitude should have been allowed him, and the most natural thing for him to do (after he ascertained that he could not carry the position held by the infantry, or inflict much damage thereon) was to leave a small force in observation or a containing force, then move with his guns and bulk of his cavalry to the assistance of his hard pressed comrades at Sherman Heights, increasing by this concentration of Brown forces, the chances for the destruction of the bridge and possibly, defeat of the Blue cavalry. The entire command, a mounted one, having a reputation for mobility, could have prevented the infantry command from gaining any considerable distance even if it had had the temerity to brush aside the containing force in its front and to march towards its goal, Manhattan, or retire upon the Blue force at the bridge. A better solution of this troublesome Blue infantry question would have been to put it out of the day's problem by simultaneous attack of the entire Brown force which, though probably slightly disfigured, could have calmly pursued its own way.

The Infantry (Blue) moved out promptly taking advantage of cover and was well handled; their opponents likewise made skillful use of cover except in early stages when the lead horses were unnecessarily exposed.

The solitary combat on Sheridan Bluffs we may designate as a drawn battle.

Passing on to the separate and distinct combat on Sherman Heights which was between opposing forces of dismounted cavalry, we find that the Blue force occupied a very contracted line of resistance too far to the rear, and controlling a very limited area in their immediate front—the west end of Sherman Heights not being occupied—thus permitting that part of the two guns that had survived the gauntlet of fire from the Blue infantry on Sheridan Bluffs, and the long range fire from the dismounted Blue cavalry, to come into a position overlooking the lead horses and the railroad bridge. These two guns of the Brown battery in their movement from position southeast of Hill 1332, by a circuitous route to this final position, had consumed some thirty-six minutes of valuable time. It is understood this loss of time at a critical period of attack was due to a misunderstanding of orders. From this final position it directed a fire, using explosive shells for about five minutes, onto the railroad bridge, distance some 3,000 yards. The bridge, it is believed, suffered small damage thereby.

The Brown cavalry dismounted, extended its line to a position overlooking the Republican flats, and fired at bodies of led-horses at ranges of 600 to 800 yards, and in this position were within 300 yards of the Blue skirmish line.

The Blue had opportunity, about that time, for counter-attack by detaching a dismounted force up ravine to the Brown's left, and double him up, upon his led-horses, brought too close up to the firing line. The position held by the Blue forces, necessitated by conditions of the problem, was cut diagonally by the Pump House Cañon and split up by tributary ravines, separating this line of resistance and rendering intercommunication and rapid reinforcement by shifting troops on the line impracticable.

Brown patrols penetrated the Blue outpost line, one reaching the bridge, which, however, was protected by a strong officer's patrol, and this venture resulted in the capture of one of the Brown patrols and no damage to bridge.

The use of small patrols in open country, out in front of Brown cavalry, instead of a thin cloud of skirmishers, a few yards apart, frittering away energy, was a noticeable improvement on former screening duty.

The most serious defect shown by these movements, seemed to me to be lack of means for rapid transmission of information even in the small concentrated infantry command; the rights of the line knew not the condition existing on their extreme left and the commanding officers of neither Blue nor Brown had any apparent communication or connection with their detached forces, not even information from their immediate fronts sufficient for them to base intelligent action upon.

While cavalry on the move was as a rule well concealed, the grey horses of the Calico Troop of the Browns, were visible at great distance.

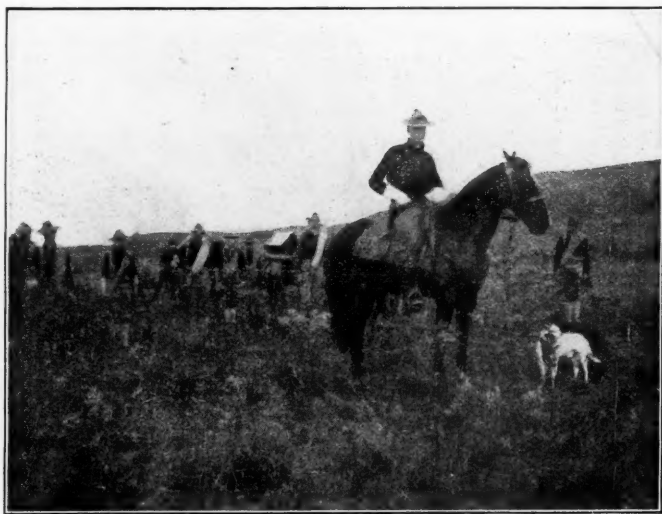
The Signal Corps detachment laid a line from brigade headquarters to Morris Hill, and by subsequent orders from there to Major Abercrombie's command on Sheridan Bluffs, and to the position of Captain Elliott on the athletic field. These connections were made in less than twenty minutes after being ordered, and only once interrupted through the efforts of a zealous Brown officer's patrol, taking some yards of wire as a souvenir.

The above described exercise, selected at random, serves to convey an idea of the method used in initiating, conducting and demonstrating these problems. The "situations" were carefully thought out, the detachments apportioned with due regard to the conditions of the problem, and all phases of the resulting contact of the opposing forces were reported upon. Each commander reported his estimate of the situation together with a statement of the operations of his forces. The subordinate umpires attached to elements of a detachment, the senior umpire on each side, and the Chief Umpire for the problem, all submitted reports. At the meeting in the "Assembly Tent," on the evening following the completion of a problem, these reports were read to all the officers of the command, and the problem was then opened for and subjected to general discussion.

Much of the success of the Fort Riley camp was due to the good work done by the heads of the Staff Departments, who

applied themselves loyally and vigorously to their tasks. All problems of inspection, transportation, subsistence, sanitation, payment of troops, engineering, ammunition supply, communication, etc., were solved ably and expeditiously.

The work of the inspector general was characterized by the tirelessness of a steam engine and the discerning power of a microscope. His field of observation and his application of corrective measures covered every detail of camp life. Tentage and other cover was kept to the allowance and in



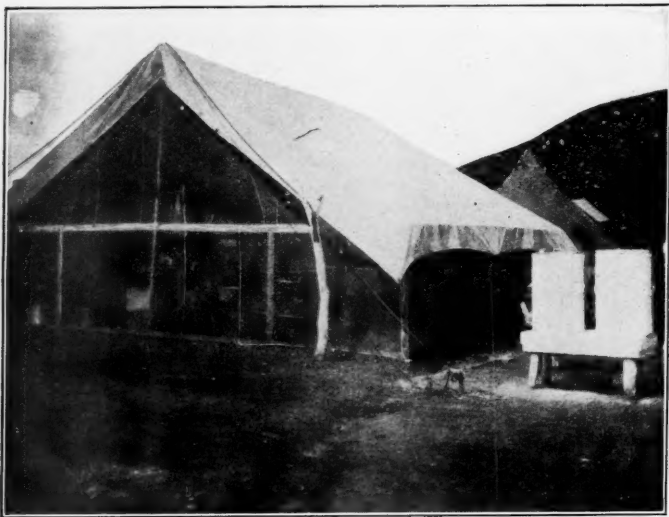
MACHINE GUN PLATOON, 18TH INFANTRY.
LIEUT. J. M. CUMMINS, COMMANDING.

the location contemplated by current regulations; company kitchen, streets, store-tents, cavalry picket lines, latrines; in short every phase of camp activity, and every sort of equipment was kept by him constantly under a scrutiny from which there was no escape.

His theory seemed to be to correct inaccuracies, omissions and insufficiencies on the spot, rather than to make these faults the subject of long and vexatious reports and correspondence. The inspector general also inspected each com-

mand upon its arrival in camp and upon its departure therefrom, gathering much valuable information as to the quality of all sorts of equipment and as to the condition of men and horses.

The Quartermaster's Department was conducted, apparently, on the basis of "deeds not words," and the troops were well served with transportation, forage, wood and such other supplies as the chief quartermaster was called upon to furnish. Probably the most vexatious problem that confronted this department was the disposal of wastage. The



A COMPANY KITCHEN SCREENED.

contents of latrines were removed by means of "odorless excavators," and this system proved successful. The railroad trackage facilities near the camp site, greatly reduced and facilitated the work of the Quartermaster's Department in the matter of detraining and entraining troops and receiving supplies.

The Subsistence Department prepared for the incoming troops by accumulating 333,080 rations in the Fort Riley storehouses. Besides these rations, sufficient sales stores were

brought in and the regular supply of fresh beef, vegetables and ice arranged in advance. The chief commissary made a study of every situation and every available facility that would expedite the issue of rations.

The Medical Department kept the sick report at about three per cent., the strength of the whole command averaging about 4,500 officers and enlisted men. The chief surgeon and the medical inspectors carried on their daily inspections of kitchens, waste receptacles, laundries, bath houses, latrines, drains and every auxiliary of camp life, with a devotion and a professional zeal that made them the benefactors of every man in camp. There have been few camps with sanitary standards equal to those maintained here; probably none have been superior. The serious question confronting the Medical Department was the disposal of the contents of latrines, this problem being shared with the Quartermaster's Department. The regular troops understood well enough the necessity for careful latrine police, but this question required eternal vigilance in the camps of the organized militia, for these men were not schooled in the essentials of camp sanitation, and in their minds the stirring of the contents of a latrine "savored little of martial glory," as one of our medical officers remarked. The medical department at the Fort Riley camp, though under-manned, was highly organized. The regimental infirmaries were designed to receive the sick in the first instance; from these receiving stations more serious cases were transferred to the field hospital, and those cases indicating slow recovery here, were transferred to the reserve hospital (the post hospital, Fort Riley), which for purposes of instructions was presumed to be at a distant point on the line of communication of the army. In addition to caring for these actually sick, the Medical Department demonstrated several typical features of the work of the hospital corps in battle. In the problem of September 28th, men previously tagged to indicate hypothetical wounds, fell out during the progress of the "battle" and were gathered up and carried back by litter bearers or in ambulances to the dressing stations erected on the field, thus demonstrating on

a small scale the practicability of "clearing the firing-line of the wounded."

The Pay Department attended to the prompt and regular payment of all the regular troops and those troops of organized militia for whom an allotment had been made. The functions of this department must, of necessity, produce good cheer and popularity, and these results were attained at Fort Riley.

The engineer officer directed the work of the Third Battalion of Engineers in the several exercises in pontoon



WOUNDED AT AN AMBULANCE STATION IN THE FIELD.

bridge building, and in the work of constructing a redoubt for a battalion of infantry. This "bomb-proof" redoubt was a most interesting product of engineers' skill, and the fact that the contemplated test of its efficacy by artillery fire was not executed, the proper ammunition not being available, was a very keen disappointment to all arms and departments of the service there represented. The engineer officers also supervised the construction of a permanent bridge over the Kaw River, on the Fort Riley reservation, the cost of the

bridge being estimated at about \$24,750.00. This bridge, when finished, will open up an immense stretch of territory now practically inaccessible.

The Ordnance Department was not concerned to a very great extent in the distribution of stores, its issue being confined practically to a rather limited amount of blank ammunition. It conducted a very important series of inspection and observation of the field artillery material and ammunition,



THE REDOUBT FOR A BATTALION OF INFANTRY, BOMB PROOF.
BUILT BY THIRD BATTALION OF ENGINEERS, MAJOR REES COMMANDING,
ASSISTED BY THE 18TH AND 30TH INFANTRY.

the great activity of the artillery and their extended target practice affording splendid opportunities to the representatives of the Ordnance Department.

The chief signal officer established an inter camp system of telephonic communication, and also connected the camp with the post of Fort Riley, and with the long distance system of the outside world. He provided an extensive system of field communication in all of the more important problems, the buzzer being generally used. The Signal

Corps gained much practice in establishing lines, but it seemed that the object of these lines was not always borne in mind by some of the commanders of the "Blue" and "Brown," who relied more upon the galloping orderly or the dashing staff officer.

The limits of this article will not permit an extended or sufficient review of the work done by the organized militia at this camp. Their instruction was the subject of so much thought, and their accomplishment of the work laid out for



TELEGRAPH STATION OF SIGNAL CORPS IN THE FIELD.
LIEUT. G. E. KUMPE, COMMANDING.

them in a separate program covered so much ground, that an entirely separate article should be written on that subject. The States of Arkansas, South Dakota, Iowa and the Territory of Oklahoma, sent one regiment each, Nebraska and Kansas furnished two regiments each, while Missouri came with a brigade of three regiments. Altogether 6230 officers and enlisted men of the organized militia attended the Fort Riley camp, their attendance covering periods of a week or so each, from the beginning until the end of camp.

The efficiency and zeal of the organized militia was commendable in most cases, Missouri making the best impression with her greater numbers, more experienced officers, and older, better disciplined enlisted men. Nebraska, Kansas, South Dakota, Iowa and Oklahoma can very well feel satisfied with the work done by their representatives at the camp. As for Arkansas, the tactful man would remark, "The less said the better." The composite regiment sent by this State contained a great number of mere boys whose comprehension of a soldier's duties would have seemed grotesque had there not been a serious side to the matter. The writer believes that the money spent in hauling these men all the way from Arkansas could have been more profitably devoted to increasing the facilities for elementary instruction on the State drill ground, under the supervision and observation of a regular officer. Arkansas has some men who are seriously interested in military matters, and these men ought to realize that they have a big job on their hands. They should begin at home and devise some system of rewards that will attract into their organization a higher class of men.

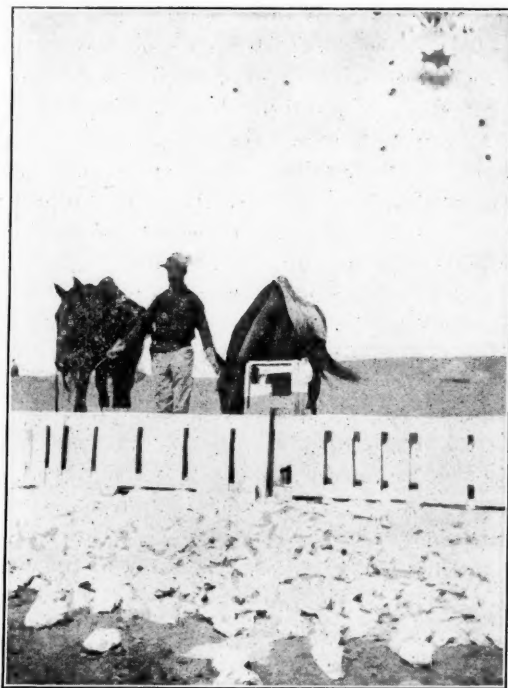
Brigade and regimental commanders of the organized militia were assigned to the command of considerable forces, including all three arms of the regular troops, in certain problems, thus affording them an opportunity to realize some of the difficulties attending high command. The opinion which the organized militia officers held of the work done at Fort Riley may best be expressed by quoting from the remarks of one of their brigade commanders, who said, "We feel that we have learned more during our tour of duty here than we have during our whole connection with the National Guard. Some of us have been in this organization eighteen or twenty years, but we feel that we have profited more during this week than during the whole term of our National Guard experience."

COMMENT.

1. It seemed to the writer that the greatest good derived from the "problems" was the opportunity there presented for field officers and senior captains to exercise a large command of all three arms. It is reasonable to believe that many of the general officers of our next great war will naturally be drawn from these officers who are now in the grades mentioned. Probably some of these officers possess brilliant military genius, by nature, but we all know that "practice makes perfect," and it is only fair to officers in the grades mentioned that they should be given an opportunity to practice larger command. Many field officers expressed themselves most emphatically with regard to this beneficial feature of the Fort Riley scheme of instruction.

2. To many of us this question occurred: "Are we making sufficient use of the present improved means of communication?" The buzzer line and the wig-wag flags certainly are not used sufficiently by many of our commanders, who apparently overlooked the value of those auxiliaries that make for "team work in war." The writer, during the recent maneuvers, saw a mounted officer utilized to carry to a distant battery an important tho simple message, the transmission of which, by the means adopted, consumed three quarters of an hour, to say nothing of the wear and tear on the horse. The battery was plainly visible from the sending point, and the message should have been sent by flag. On another occasion, a mounted messenger was sent at a gallop to carry a message between points separated by two or three miles of rough country. Within fifty feet of the officer who sent the message, a signal corps flag floated over a buzzer station from which a line led directly to the point whither the galloping messenger sped his panting steed. At the very moment the mounted messenger departed, the operator at that end of the line was conversing over the wire with the operator stationed at the point to which the message was sent. On another occasion a commander directed a mounted soldier to "follow the wire" until he found "Mr. — of the Signal Corps" to whom he was to deliver a verbal message. The messenger "followed

the wire" as far as brigade headquarters, and here not finding "Mr. —," but discovering another wire, he followed the new wire out into the field, and several hours after he had started he found "Mr. —." Now just at the point where the soldier was directed to "follow the wire" there was a buzzer station in operation and the operator could have sent a message almost instantly to "Mr. —," who



A TYPE OF WATERING TROUGH.

was at another buzzer station. The writer has listened to many discussions which centered about the hope that we may be able to devise some means of transmitting information more rapidly. Now is it not a fact that we already have the means, but we simply are neglecting to use them because of the old fixed habit of using mounted messengers?

3. The variety of ideas and methods discovered in the cavalry command impressed one that there is great need of a chief of cavalry to supervise the training and development of this very important and expensive arm. A cavalry officer of experience, himself a most successful troop commander, remarked upon the neglect of the saddle blanket and failure of the troop officers personally to inspect the horses' backs, as among the reasons for the objectionable prevalence of sore backs. A neglected blanket gathers wads of hair, bits of dirt or minute burrs, and these coming into contact with the horse's back make the small breaks or bruises that ripen into troublesome sores. A chief of cavalry could bring about uniform methods as to saddling, biting, preserving equipment and the care of horses. He would also find a wide field of activity in the tactical instruction of cavalry, which unfortunately lends itself very readily to the application of "wild ideas." No small part of the duty of a chief of cavalry would consist in the suppression of unwarranted methods of instruction and in the coördination of all of the many good ideas and methods.

4. Of great interest to cavalymen was the "Cavalry Screen" exercise of September 5th, said to be the first attempt in this country to carry out such an extended exercise since the Civil War. The screen was designed to cover a front of ten miles, and the following organizations, under the command of Colonel Earl D. Thomas, Eleventh Cavalry, sought to work out this extensive operation: The Eleventh Cavalry; First Squadron, Thirteenth Cavalry; Second Squadron, Second Cavalry; and five troops of the Ninth Cavalry—twenty-five troops in all, with Signal and Hospital Corps detachments. Colonel Thomas designated eight troops as right contact troops, and four troops as left contact troops, holding four troops as a support and eight troops as a reserve. Considering the difficulty met in shape of barbed wire fences and private lands, after the troops left the reservation boundary, this was a fairly successful demonstration of the cavalry screen. Some officers criticised the formation because of the lack of quick communication between elements of the screen, and because the contact troops appeared, to them, un-

equally distributed over the roads leading to the front. However, the majority of the more experienced cavalry officers seemed to think that, for the first attempt, there was every reason to feel satisfied with this screen, which undoubtedly would have been entirely effective in time of war.

5. Another interesting feature was the work of the horse



COLONEL E. D. THOMAS, 11TH CAVALRY, AND STAFF, DIRECTING THE OPERATIONS OF THE CAVALRY SCREEN.

artillery in conjunction with the cavalry. An accomplished artilleryman, detailed to observe this feature, remarked that most "Blue" and "Brown" commanders neglected to keep in touch with their artillery commanders, leaving them without information as to the commander's general plan of action and unable, therefore, to contribute in full measure to

the success of the operation. He advanced a remedy for this fault, recommending that the senior artillery officer accompany the commander, thus keeping in touch at all times with the reports from the entire field of action, and being able to advise as to the use of the artillery, the actual placing and operation of the guns being left, in the meantime, with his subordinates. He cautioned against the tendency of commanders to divide their artillery, prematurely or without urgent necessity, and disapproved the rushing of artillery into exposed positions early in the action, re-



FIELD BATTERY IN ACTION WITH GUNS CONCEALED BY PILES OF HAY.

marking in this connection, "The proper use of the artillery is as a support for the cavalry and not as a screen for its movements." The mobility of the horse artillery in the maneuvers may best be described by quoting from the remarks of one of the battery commanders, who said in reporting on one of the cavalry actions: "When once the action began events moved at such a rapid rate that it was impossible for me to note the exact time at which the battery engaged the enemy. * * * The guns were placed in

position at a gallop, the horses being exposed not more than forty seconds."

6. The acquisition of the new rifle by the cavalry caused the appearance of a variety of experimental methods of packing the saddle. Most cavalry commanders expressed themselves as not being quite satisfied with any of the new distributions of equipment on the saddle, deeming still further experiment a great necessity. The broken-pack originated by Captain Vidmer, Eleventh Cavalry, and now known as the "Vidmer Pack," seemed to be considered the best arrangement yet devised for the cantle pack.* The man who can devise a method of carrying the new rifle, with comfort and handiness for the soldier and with perfect equalization of weights on the saddle, will prove himself a great benefactor to the cavalry.

7. The corps of umpires and observers at the Fort Riley camp attracted much attention and comment by reason of their earnestness, activity and professional zeal. The criticism was made, very naturally, that they were not sufficiently advanced in years or in rank to be able suitably to perform all of the functions of umpires, in problems where the forces and the larger component elements thereof were commanded generally by officers of much more rank and length of service. This criticism can be answered by calling attention to the fact that the umpire acted entirely as a staff officer representing the chief umpire or the commanding general, and the question of rank was therefore eliminated; his lack of long service was counterbalanced, in most instances, by the fact that he came to camp fresh from a year or two years special study at Fort Leavenworth, in a course calculated to give him a mental equipment particularly suited to this very duty; his youth gave him a degree of activity essential to the hard work and long hours incident to his duty. Moreover, the decisions of the umpire were always subject to review in the discussions. The writer believes that the most acceptable corps of umpires would be one composed of senior captains, especially selected because of particular

* See article on Equipment, under Military Notes, in this issue.

study of the subject of maneuvers, but such men are not available always or generally, in sufficient numbers. We cannot well avoid the conclusion that the work of umpiring can best be done by men who have given particular and successful study to the art of war, even though they may have the taint of youth and low rank.

8. Everyone regretted that the quota of infantry at the Fort Riley camp was so small, this feature causing consider-



EIGHTEENTH INFANTRY STARTING ON THE MARCH TO FORT LEAVENWORTH.

able inconvenience in the preparation and execution of the problems. However, the two regiments present, by their excellent quality made up very materially for their numerical insufficiency. Their camps were models, their marching powers superb, and their administration and organization were characterized by thoroness and great attention to detail.

9. A book of many pages could be written on the features of this camp, which, in this article, can merely be given passing mention. The organization and the strenuous activity of the provisional regiment of field artillery, with its feature of night target firing by search-light illumination, its formation of a typical war strength battalion and its carefully prepared and faithfully executed series of artillery exercises, might well be made the subject of separate treatment. The construction of the permanent bridge and the bomb-proof redoubt by the Third Battalion of Engineers has furnished material for interesting and extended comment. A volume could be written, too, most happily, upon the spirit of good fellowship and the cultivation of pleasant and beneficial acquaintanceships which resulted from the association in this great camp of all arms, corps and departments of the service.

FINGER PRINTS.

By M. W. McCLAUGHRY.

THE recent decision of the United States military and naval authorities, to adopt and use what is known as the "Finger Print System of Identification," in describing the enlisted men of the army and navy, has caused many inquiries as to the origin of the system, the methods used in its operation, and the advantages expected from it. With a view of answering some of them, the following is submitted :

Identification by means of finger prints is not a new science. The Chinese passport for centuries has consisted of a piece of oiled paper, stamped by the authority of the Chinese government, on which the person to whom the passport is issued impresses the tips of his fingers. Long ago it was discovered by the Chinese authorities that this is an effectual means of preventing the transfer of a passport, for the reason that the ridges of the fingers of no two persons are alike. In the year 1823, a German scientist named Purkenje delivered at the University of Breslau a thesis or "commentatio" upon the subject, accompanied with illustrations of finger prints, and an attempt at their classification. This address, which would be considered at this day of great merit, did not attract the attention of the public, but did interest a few persons, who saved it from oblivion, and about forty years ago Sir William Herschel, while representing the British government in Bengal, India, made extensive studies into the nature and value of finger prints as sign manuals, and finally, as he states, introduced them for practical purposes, in several ways in India, with marked benefit. They rendered attempts to repudiate signatures quite hopeless.

Finger prints were taken of pensioners during their life time to prevent their personation by others after their death; they were used in the office of registration of deeds and wills and at a gaol where each prisoner had to certify the record of his imprisonment, after signing his name, by making an inked impression of his right forefinger on the pages of the records. (See "Finger Prints" by Sir Francis Galton, page 38.)

This writer further states that Sir William Herschel "in the year 1877, submitted a semi-official letter to the British General Inspector of Gaols, asking to be allowed to extend the finger print investigations; but no results followed." Probably that officer, like some British inspectors of a later day, could not comprehend a system so simple that it required a little study. Sir Francis Galton further generously says:

"If the use of finger prints ever becomes of general importance, Sir William Herschel must be regarded as the first who devised a feasible method for regular use, and afterward officially adopted it."

Sir Francis Galton, twenty years ago, rendered the world a great service by taking up the studies of his predecessors, and by a series of experiments reducing the subject to a science, and discovering the best method of taking the imprints from the fingers of human beings.

Of him Mr. John Kenneth Ferrier, a representative of the Scotland Yard Bureau of Identification, at the Louisiana Purchase Exposition at St. Louis, Missouri, in the year 1904, says: "He established the fact that the papillary ridges on the finger tips are permanent through life; thus every person carries about with him on his hands ten infallible witnesses to his identity. A child is born with its fingers lined in a certain unique way; the fingers grow in size, but throughout boyhood, manhood and maturity, the patterns remain unchanged. From infancy to senility, and until long after death, the finger prints remain true to their first form. Injuries may partially destroy them, but never entirely, and as the injuries heal the original lines assert themselves exactly as before."

But, although the reliability of finger prints as a means of identification has long been established, this fact yielded no practical results, because, up to a few years ago, no satisfactory method had been discovered of so indexing or classifying them that an identification of a person once made and recorded could be relied upon as identifying the *same person and none other*, when again referred to, no matter under what circumstances.

A few years ago Mr. E. R. Henry, now Chief Commissioner of the Metropolitan Police Department of London, England, with headquarters at Scotland Yard, while serving as Inspector General of Police in India, devised a method of classification, which, after being subjected to the severest tests for several years, has proved absolutely infallible. Mr. Henry's system of identification was adopted in lieu of the Anthropometric System of Identification at Scotland Yard in the year 1901. In that year the number of successful identifications of former criminals, whose finger prints had been taken but not classified, increased from 501 to 1722; and for the years 1902 and 1903, 3642 successful identifications were made. In May, 1904, Mr. John Kenneth Ferrier of the Finger Print Bureau of Identification at Scotland Yard, London, England, was sent to the Louisiana Purchase Exposition at St. Louis, Missouri, to illustrate and explain the workings of the finger print system as used at Scotland Yard to such police and prison officials of the United States and Canada as might visit the Exposition. From the 1st of January, 1904, up to the time he arrived at St. Louis, 2335 identifications had been made at Scotland Yard, London, by the finger print system.

While in the United States, Mr. Ferrier visited Leavenworth, Kansas, and spent several days assisting the Record Clerk of the United States Penitentiary in establishing the finger print system in that institution. The Record Clerk also spent some time at St. Louis attending the school of instruction under the supervision of Mr. Ferrier. After having taken the finger prints of all the prisoners in the United States Penitentiary, and of those prisoners who were subsequently received into the penitentiary, until a collec-

tion of about 1800 sets of finger prints were on file, the Record Clerk, by authority of the Department of Justice, went to London, England, in February, 1906, and spent nearly two months in making a further study of the system at the famous Scotland Yard Bureau of Identification, where there are on file, in excellent shape, nearly one hundred thousand sets of finger prints, which present all questions possible under the system. Here he further perfected himself in the knowledge of all its details under the supervision of several experienced and able officials. After his return to the United States in April, 1906, the Record Clerk spent several weeks in revising the classification files at the United States Penitentiary, and succeeded in placing its Finger Print Bureau of Identification on the same efficient basis as the Scotland Yard Bureau.

The use of the following cuts has been kindly permitted by the *Medical Brief Monthly*, a journal edited by J. J. Lawrence, A. M., M. D., at St. Louis, Missouri, which, in the November (1905) issue, published an exhaustive article on "Finger Prints" by Dr. John George Garson, in which these cuts were used. The following descriptions of methods used are largely either quoted or adapted from Dr. Garson's article, and with the cuts, will greatly aid in making clear the system devised by Mr. E. R. Henry, and which, adopted by our military and naval authorities, is destined to be of great practical assistance in debarring the criminal element, whose finger prints may have been taken in this and in foreign countries, from entering the army and navy of the United States.

The apparatus required for taking the finger prints is as follows:

1. A wooden block, cut in the shape of a standard railroad rail, about twelve inches long, four inches wide and three and one-half inches high, with a smooth sheet of tin or copper placed on the top with the edges tacked underneath the rim of the wooden block.
2. A small marble slab about eight inches square and one inch thick.

3. A rubber roller with a handle about one and one-half inches in diameter and four inches wide.

4. Black printer's ink, printer's ink oil (to reduce the ink when it is too thick) a bottle of benzine, some clean muslin cloths and the necessary white paper.

The following is the method of taking impressions of the fingers: Place a small quantity of ink on the marble slab and then roll the rubber roller over it until the roller is thoroughly inked all around; then "distribute" over the top of the tin or copper covered wooden block until the entire surface is evenly coated with ink. The fingers having been previously washed with soap and soft or warm water, and partially dried, the tips are each rolled in turn on the inked block and then on the paper with the least possible pressure. In applying the finger to both the inked block and the paper, care should be taken to roll it from the one side of the nail over the bulb of the finger to the other side of the nail, so that the complete impression of the ridges of the whole of the terminal phalanx, from one side to the other, and from the transverse crease lines of the last joint to almost the end of the digit, may be obtained. No halt must be made during the process of rolling the finger and it must not be permitted to slip, otherwise an imperfect or blurred impression will be the result. If the impression be not satisfactory the whole of the ink should be washed off the finger with a clean cloth saturated with benzine, and the process repeated. A good impression should show the ridges as black lines and the furrows as white spaces between them, clearly and sharply defined. If the lines representing the ridges are faint in color, there has been too little ink on the tin or copper covered block. If, on the other hand, the lines are dark enough but the interspaces are not white and clear of ink, too heavy pressure has been put on the digit while rolling it, or there has been too much ink on the tin or copper covered block. It is essential that the furrows should be free from ink and only the tops of the ridges inked to get clear impressions. Having secured the impressions of the digits of a few persons it will be found on examining them

that the arrangement of the ridges on the different fingers is subject to considerable variation in form and direction.

Purkenje, in 1823, divided the different patterns or formations of the ridges into nine different classes, but certain subsequent scientists have increased the number, while others have reduced them. It is now generally recognized that there exist three main types to which the different arrangements of the ridges met with conform generally, but there are several varieties of each type, and patterns are constituted by a combination of two types, or are of a non-descript form. A fourfold division with certain subdivisions is, therefore, found to afford a sufficient classification for practical purposes. The several dispositions of the ridges are accordingly classified as *arches*, *loops*, *whorls* and *composites*. The arch is the simplest and most primitive arrangement of ridges met with. (See Fig. 1.) There is another kind of arch



FIGURE 1.

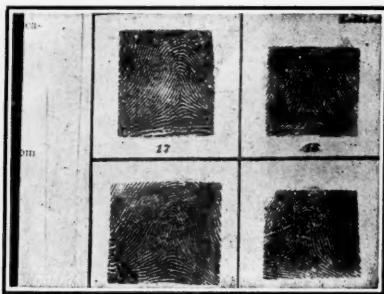


FIGURE 2.

called the *tented arch*. In it the more or less transverse ridges beyond the crease lines are succeeded by one or more ridges, which suddenly become thrust upwards at an acute angle from the middle of the base of the arch, which causes the ridge immediately beyond to assume a tent-like shape. Fig. 2 is an example of a *tented arch*.

The *loop*, which is the most common variety, is of the pitch-fork or hair-pin shape with the lower points slightly curving upward. (See Fig. 3.)

The ridges in a clasped flat hook shape, as illustrated in Fig. 4, causes that pattern to be called a twinned loop. The formation shown in Fig. 5 is called a lateral pocket loop, and in Fig. 6 a central pocket loop. Those shown in Fig. 7 are called accidentals, because their peculiar formations can not be classed under the above stated patterns. The patterns shown in Figs. 8, 9 and 10 are called whorls.

The relative frequency of these various patterns is in round numbers: Arches, five per cent.; loops, sixty per cent.; whorls, accidents and composites, thirty-five per cent. The



FIGURE 3.

greatest variety of patterns is found on the fore-finger and the least variation occurs on the little finger; whorls are most frequently met with on the thumb and ring finger; loops on the little and middle finger; arches on the fore-finger.

The results of careful comparisons made on many thousands of finger prints have shown, up to the present time, no two sets of prints of even a single digit to be identically alike, except they were those of the digit of one and the same individual. It is the case, however, that single digits of dif-

ferent persons have been found to show not only close correspondence in pattern, but also similitude in three or four points of detail in the pattern; the other points have invariably been sufficiently unlike to differentiate their individuality clearly and with certainty. Finger impressions have,



FIGURE 4.



FIGURE 5.



FIGURE 6.

therefore, come to be recognized as a most reliable and easy means of effecting personal identification, and are adopted for this purpose by many prisons and police authorities for the recognition of old offenders, and sometimes for the identification of the perpetrators of crime. Their use might well

be extended for the purpose of preventing pensions being drawn by others than the pensioner himself, and indeed for all purposes of identification. When well taken, prints of the ten digits of the hands are available for comparison with another set of impressions equally clear, and the utmost reli-



FIGURE 7.



FIGURE 8.



FIGURE 9.



FIGURE 10.

ance may be placed upon the evidence they give of the identity or non-identity of the person or persons from whom they were taken.

The impressions of one or more fingers may be accidentally made on other substances than paper; it may be

on the surface of some object at a place where a crime has been committed, on charge of which some person has been arrested. The question of the identity or non-identity of the print found with the pattern on any of the digits of the prisoner becomes a matter of great importance. The casual print has been made under very different circumstances from those with which it is compared; generally it is the result of a digit somewhat moist with the normal excretions of the skin, plus some dirt superadded, coming in contact with a surface not specially suitable by want of smoothness, or otherwise, to receive the impression, unless the surface happens to be glass, porcelain, or polished metal. The moist condition of the digit may be due to blood upon it, in which case the furrows, as well as the ridges, have probably been covered more or less equally by it. The conditions are, therefore, not, as a rule, favorable to obtaining good impressions, and it may not be possible to improve them to any extent by dusting powder over them or otherwise. In such cases the greatest caution must be exercised in coming to a conclusion as to the identity of the prints. The affirmative should be asserted only after stringent examination has shown many points in the prints compared to be thoroughly in agreement, and likewise the absence of any obvious disagreement between them. The latter condition is as essential as the former, while the presence of any disagreement should be regarded as distinct evidence that the prints were made by different fingers.

A question of some importance is whether any discrepancy will be produced in two prints of the same finger by reason of their being made under different degrees of pressure. Minor variations, such as those which depend on differences in height of the ridges, do occur in the prints as a result of the finger being lightly or heavily pressed in printing; in the latter case a ridge may appear continuous, which in the former case shows interruption in continuity, but irregularity in inking the finger will produce the same effect. Heavy pressure flattens the ridges somewhat, and therefore makes them appear broader in the print, but again this condition is, to some extent at least, inseparable from the man-

ner of inking the fingers; for if only the summits of the ridges have been inked, the lines they show in the impression will be narrower than when the ink has extended further down the sides of the ridges. It is only by taking into consideration the general and special aspects presented by the two prints, and studying them in connection with the structure of the skin that the factors can be determined. The main features of the ridges and furrows are not distorted nor altered in their directions by varying pressure, because, in consequence of the difference in consistency which exists between the surface layers of the skin and the subcutaneous tissues, the pressure is distributed and equalized in all directions. The expert who is called upon to determine the question of identity or non-identity from casual prints has frequently a difficult problem to solve, upon which he must bring to bear his knowledge of the anatomy and physiology of the finger as well as the information derived from his observations of the prints, in order to enable him to arrive at his conclusion. Should he embody photographic enlargements of the impressions in his study he will find it desirable to use positives made on glass in his investigation.

The classification of finger impressions is chiefly of interest to those who have to arrange large collections. It has been elaborated with much care by Mr. Francis Galton and the staff of the Bengal police into a very complete system, of which only the outlines can be given in these pages. For this purpose the arches are classed with the loops and the composites with the whorls, so that only two divisions of patterns have to be dealt with. The different combinations possible of these two classes on each pair of digits, beginning with the right thumb and forefinger, are then taken into consideration. Under this scheme there are four possible combinations on each pair of digits, which may be represented thus,

LL	WL
LW	WW

using the initial L and W for loops and whorls, respectively. The five pairs of digits give, individually, and collectively with one another, 1,024 possible combinations,

which form the primary divisions of the classification. The size of the groups will be most irregular as regards the number of sets of prints in each, but as the various forms bearing the impressions of different persons' fingers are kept in portfolios, a larger or smaller number of groups can be placed together, much after the plan of a dictionary or encyclopedia, covering several volumes, where the size of the volume is the regulating factor. The actual formula of each pair of digits is written in the form of a fraction, of which the upper letter denotes the pattern of the first digit of the pair and the lower letter that of the second digit, thus the right thumb and forefinger bearing respectively a loop and a whorl is indicated as l.w, and a complete formula might be written as follows:

$$\frac{1}{w} \frac{1}{l} \frac{w}{l} \frac{1}{l} \frac{w}{w}$$

As the number 1,024 is the square of thirty-two, all the combinations of the upper letters would be represented in a horizontal row of thirty-two small squares, and those of the lower letters in a vertical row of thirty two squares, placed at a right angle to the former row. Constructing a large square with 1,024 compartments of chess board-like appearance from these and other rows, each compartment would be accurately defined by the intersection of any of the horizontal lines with any of the vertical lines, and it is possible to assign to each of the 1,024 combinations represented by the compartments, definite numbers corresponding to their places in the horizontal and vertical rows. This is done by considering the whorl division only, and assigning a serial number to each whorl according to the position it occupies in the finger formula.

When a whorl occurs in the first pair of digits it counts sixteen, in the second pair it counts eight, in the third four, in the fourth two, and in the fifth one; it is already understood that no numerical value is given to an arch or to a loop. The above formula can then be expressed as follows:

$$\frac{0}{16} \frac{0}{8} \frac{4}{4} \frac{0}{2} \frac{1}{1} = \frac{5}{17}$$

Numerators are added together, also denominators, and

the totals exhibited as a new fraction, $\frac{5}{17}$. To both numerator and denominator one is added, making $\frac{6}{18}$, and this fraction inverted gives the classification number as $\frac{18}{6}$, which represents that the compartment is on the sixth horizontal row and at the eighteenth section as the definite position, supposing the respective rows were numbered from 0 to 32.

A finger formula composed entirely of loops would occupy the first place or upper left corner compartment of the chess-board and would be designated 0, both horizontally and vertically. By writing out the formula and summing it up for the finger impressions of each person, the exact place he occupies in the primary classification is obtained. Secondary classifications are obtained from the particulars displayed by individual digits, such as the presence of an arch on the fore-finger; the slope of a loop, and the number of the ridges between the outer and inner terminuses; the deposition of the ridges below the deltas in a whorl, the special form of a composite, and the like.

Among the advantages expected from the new system, the following enumerated by Major General Ainsworth, the Military Secretary, in his recent report, are some of the most important. He says:

"The finger prints of an unidentified dead soldier in the field of battle will establish his identity and 'unknown dead' in the field should be a thing of the past. The finger prints of the former soldiers also will serve as an infallible means of identification in the many pension and other cases in which it becomes necessary to establish to the satisfaction of the government the identity of the applicants."

THE SKILLED PACKER.

BY COLONEL H. L. SCOTT, SUPERINTENDENT U. S. MILITARY ACADEMY.

WEST POINT, NEW YORK, November 26, 1906.

Editor of the Cavalry Journal.

DEAR SIR:—The July number of the CAVALRY JOURNAL sent to the Philippines, reached me several days ago, and while reading it the following paragraph drew my attention:

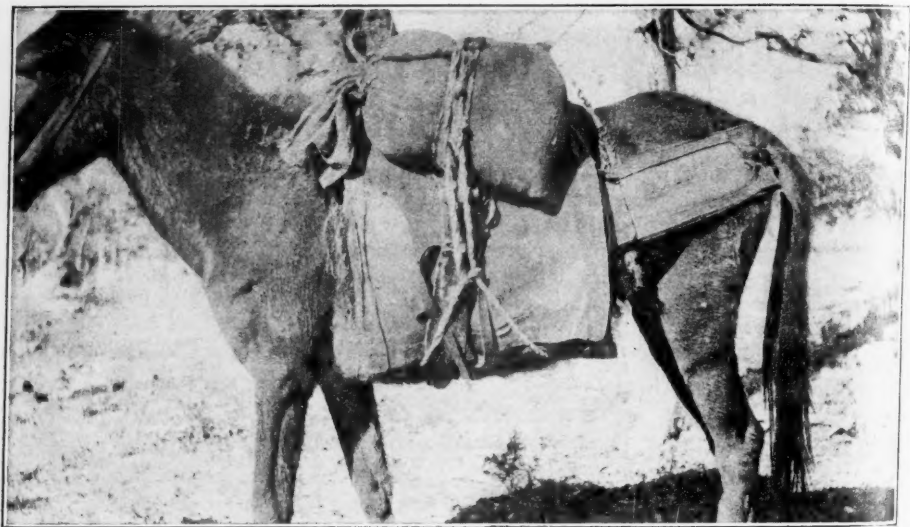
Page 68: "The Pullman pack saddle and panniers, as connected with the aparejo, does away with all ropes, lair, sling, lash and cargo, and the diamond hitch method of fastening the pack to the aparejo; with all canvas * * * and reduces to a minimum, if not entirely, the necessity for employment of the skilled and experienced packer,"

and it occurred to me at once that if this statement should be approved and acted upon by the War Department, a very severe blow would be dealt the efficiency of the mounted service.

The modern pack train, as perfected and operated in our Western campaigns by the Quartermaster's Department, first under the inspiration of General George Crook, by such men as Thomas Moore and Henry Daly, chief packmasters of the Quartermaster's Department, and later by Mora Smith, chief packmaster of the Philippines, Packmasters Mooney, Ford, Baxter, Davis and a host of others, with the men trained under them, is the best rapid transportation to accompany mounted troops in countries like our own the world has ever seen; and the feats it has accomplished under adverse circumstances in Cuba, the Philippines and in our own West, if fully set forth in books, as they should be, to be known of all men, would form annals of which the army and those connected with it would be justly proud. But it has needed the

genius and experience of such men to develop and carry on the system, and these the above paragraph proposes hereafter to do without.

Let us examine this proposition: The object appears to be, in a few words, to do away with the experts about a pack train in the interest of economy, by substituting essentially for the lash and sling ropes, etc., a pair of rawhide panniers which "can be filled by any soldier or laborer." This quotation indicates a belief on the part of some one that the



MEXICAN PROTOTYPE OF THE AMERICAN APAREJO.

(Without sticks inside.)

only employment for which the expert is needed about a pack train is the skillful use of those ropes—a fallacy often noticed, than which there can be no greater, for the mastery of the diamond hitch is one of the least difficult parts of the art of packing, as men of average intelligence can be taught to "throw the diamond" easily and skillfully in ten days, whereas it takes much more than a knowledge of the diamond hitch to make a packer. The most important and difficult part of the art lies in the conservation of the animal, for

without the animal all the panniers and lash ropes in the world will not transport your cargoes; he must be kept sound in health, with the "rigging" so adjusted to each individual as to enable him to carry his load under all the varying and adverse circumstances of a rapid campaign with comfort and safety; a feat which but comparatively few men to-day in America or elsewhere are able to accomplish.

In addition to a perfect knowledge of the setting up and "fitting of the rigging," which includes the altering for and reducing bunches which are liable to arise on various parts of the mule's body, the packmaster must have a great executive capacity. He must organize the train so as to manage the proper number of mules to the best advantage with the minimum number of men; the pack animals must be trained so as to be easily caught, and to come quietly to the rigging; the saddle animals to stand alone without tying, and each man must be trained for his own duty, and all to work together promptly to the best advantage or the train will never get out of camp on time. Each animal must be apportioned his proper load so the train will take up all the heterogeneous articles required by a squadron of cavalry to be transported, such as axes, shovels, buckets, food, forage, medical supplies, tentage and ammunition, and no animal must be overloaded while others are too lightly loaded. The animals must be kept in training so their backs are tough, their bodies lean and muscular, their internal organs free from fat—ready, in fact, for a rapid march. These are some of the many duties of a packmaster, which require for their skillful performance a man of great experience, executive capacity, natural aptitude and good judgment; and the attempt to do away with this expert and replace him by a "pannier filler" would be just as rational as to attempt to do away with an expert in the management of a steamboat, a watch factory or an ice machine. Furthermore, the detailing of soldiers away from their organizations, as suggested above, to fill panniers, or for any other purpose which will keep them from the firing line, is deprecated by all commanders of troops and by all writers on the art of war.

Considering the panniers themselves, although I have

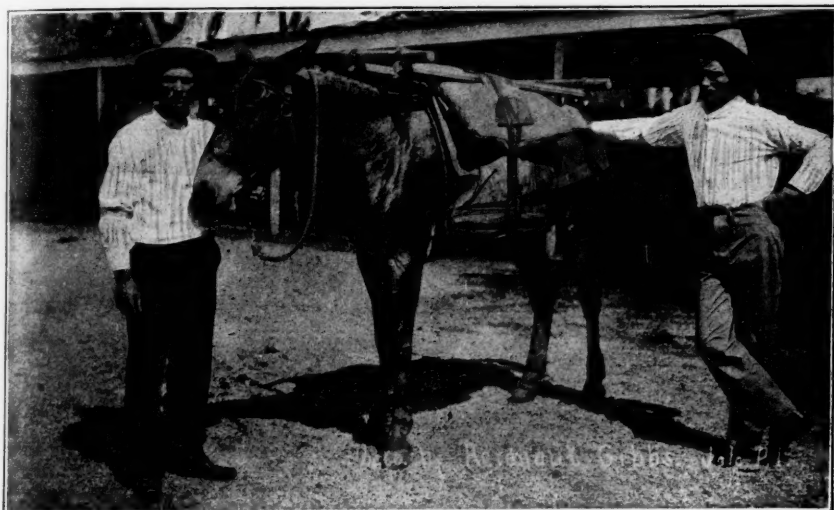
not seen them myself, I have been told by those who have, and are fully able to judge, that they add about sixty pounds to the load the mule must carry, over the diamond hitch method; that they sway so as to cause the animal discomfort and annoyance while traveling; that when an animal gets down in a swamp they fill with water and must be cut off to



CAGE OF NAVAL RAPID FIRE GUN, 540 POUNDS. U. S. NAVAL GUNBOAT QUIROS.
LIEUTENANT WALKER, U. S. N.

enable the animal to rise, thus spoiling the panniers, whereas a lash rope can be cut and only a few feet of rope spoiled; that they are a patented article; that they are not adapted for the emergencies which are always liable to happen in every campaign, such as did happen in the Sulu Islands when a large command had to be supplied by a small and incomplete pack train, and when the Jolo train under Mora

Smith and Davis carried about 400 pounds to the animal without injury, or when the same train took up the base or cage of a naval rapid fire gun placed on the beach by Lieutenant Walker, commanding United States Gunboat *Quiros*, transported it to the interior to the firing line, where it did great damage to the Moro fort, and after the fort was taken the same mule carried back the cage to the beach. This cage, which was of a very unwieldy shape and



PLATFORM FOR PACKING HOSPITAL LITTER IN JOLO TRAIN.

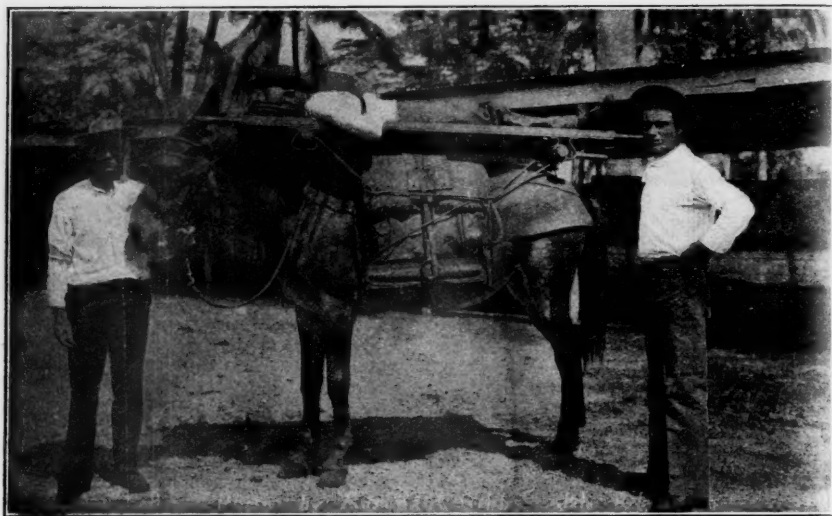
Platform can be improvised of bamboo, tent poles, or any other straight poles.
Litters should be jointed in middle and folded when not in use.

weighed about 540 pounds, was carried on an ordinary aparejo to which it was made fast by a lash rope.

Had there been no real packers along, the command would have had to do without the services of this gun; and the wounded would not have been carried down to the sea as easily and speedily as they have many times been carried by this train.

The more thoughtful and experienced officers have long perceived that the sources from which the earlier packmas-

ters and skilled packers were drawn, viz: the civilian trains which carried supplies to the mines in the Rocky Mountains, have dried up; that if this art, so essential to the mounted service, is to be kept alive, steps must be taken to preserve it by the Quartermaster's Department maintaining a school for packers, and keeping enough in constant employment to furnish sufficient packmasters to organize, equip and discipline all the pack trains that will be needed in time of war.



METHOD OF PACKING HOSPITAL LITTER IN JOLO TRAIN.
PACKMASTER DAVIS AT THE HEAD.

But it is contended that this is expensive. So are arms and cannon expensive, food and ammunition—all wars and preparations for war are very expensive, and these pack trains, thoroughly organized, equipped and exercised, are no less necessary for mounted organizations, to permit them to get in touch with the enemy with food and ammunition sufficient to enable them to hold on and not let go to fall back to their base for want of supplies. It is considered to be a very solemn duty of the Quartermaster's Department to

maintain this service in the highest state of efficiency; to this end it should cause every pack train in the service to be inspected by its Chief Packmaster several times a year, with power to recommend to the Quartermaster General discharges of packmasters and packers for inefficiency, and the transfer of skilled men from trains in other departments to



JOLO TRAIN CARRYING WOUNDED TO THE SEA.

Care must always be taken to choose mules which travel with the "pack gait," and each mule must be led by a man to prevent him from running under branches and injuring the wounded. Note the bamboo platform.

fill vacancies when they occur, instead of permitting these vacancies to be filled frequently by deserving wagon masters, etc., to get them a higher rate of pay, while they are packmasters on paper only; and lastly, it would benefit the mounted service if the War Department should put in force for the whole mounted service the order you published on this subject in the July number from the Division of the Philippines, which worked excellent results in the Department of Mindanao and in Cuba, as it is most essential that every commander of mounted troops should know the details

of this art, and not permit his reputation and chances of success to be in the hands of some paper packmaster whom he does not know enough to educate and control. He need never be uneasy about the real packmasters, however, for a more loyal, untiring and devoted set of men in the field I have never served with.

And now it is for the "Old Guard," who have so often listened in the past to the tinkle of the bell, to stand together like a rock to preserve the aparejo and the diamond hitch from innovations which weaken their efficiency; to foster the care of the real packer, and the system that has served them so well in the past, which, if properly fostered and opportunity arrives, will so serve them again.

PRIZE PROBLEM NO. 1, SOLUTION.

U. S. STAFF COLLEGE,
FORT LEAVENWORTH, KANSAS,
November 23, 1906.

Editor Cavalry Journal:

SIR:—We have the honor to inform you that of the solutions of Prize Problem No. 1, submitted for our examination, the one signed "Happy Jack" is, on the whole, the best, and is worthy of the prize offered. While we find features to criticise in this solution (as would doubtless be true of almost any tactical problem), we also find that other solutions possess merit, and that the following are worthy of mention: The one signed "Texas" and the one signed "PQR XYZ."

We congratulate the JOURNAL on the success of its first venture in its latest educational enterprise and bespeak for it a continued career of usefulness. The solutions submitted are, in the main, too long for publication, and we therefore recommend that future solutions of these "small" problems be limited to 2000 words.

Very respectfully,

D. H. BOUGHTON,
Major Eleventh Cavalry.

M. F. STEELE,
Captain Sixth Cavalry.

* * * *

Prize solution awarded in accordance with the above recommendations to First Lieutenant Andrew J. Dougherty, Twenty-eighth Infantry.

Special mention:

Captain Wyatt O. Selkirk, Texas National Guard.

Captain Howard R. Hickok, Fifteenth Cavalry.

In future competitors will submit their solutions so they can be printed in JOURNAL without the expense of making new plates for the maps. There are no objections to submitting solutions with the map attached, but the positions of forces should be so described as to be intelligible to one using the original map only.

PRIZE PROBLEM NO. 4.*

Situation:

On October 1, 1906, a battalion of Eastern (Red) infantry is ordered to seize and hold Fay's Bridge; its commander (Major A) is informed that an important Western (Blue) convoy is expected to begin crossing the bridge at 1:30 P. M., and that the bridge must be seized before that time and prepared for demolition.

Upon approaching Charlotte (from the east) shortly after noon, patrols of Blue cavalry are seen in the vicinity of that town by the Red advance guard, which consists of one company.

At 12:30 P. M. when the support of the Red advance guard reaches Section House No. 2 (northwest of Charlotte) it comes under rifle fire from Prospect Hill and takes cover at the Section House. Major A is with the reserve (one platoon) of the advance guard at the junction of the Charlotte-Youngstown and the Charlotte-Booth's Mill roads.

Required:

1. Major A's estimate of the situation, including a statement of the plan by which he proposes to execute his mission.
2. His orders.

*See map in October, 1906, issue of the JOURNAL, opposite page 334. For condition of solution see April, 1906, issue of the JOURNAL, page 702, and the recommendations and remarks given on pages 521 and 522 this issue.

INFANTRY AND CAVALRY SCHOOL PROBLEM IN OCTOBER (1906) JOURNAL.

DEPARTMENT OF MILITARY ART, U. S. INFANTRY AND
CAVALRY SCHOOL.

Course in Organization, 1906-07.

PROBLEM 2. AN APPROVED SOLUTION.

First Requirement.

Number of cavalry regiments—15.

Number of infantrymen— $15 \times 1,236 \times 6 = 111,240 = 70$
regiments (one regiment 200 short)=23 brigades + 1 regi-
ment=8 divisions (the 8th containing 2 brigades and 1
regiment)=4 corps, necessitating 8 provisional regiments of
field artillery, 8 battalions of engineers, and 8 companies of
the signal corps. Four field hospitals are required for each
division, also one regiment of cavalry. This leaves seven
regiments of cavalry to be organized into a cavalry division
as shown below.

U. S. ARMY.

Corps.	Divisions.	Brigades.	Regiments.	Art., Cav. and Spec. Troops.
1st	1st	1st	1st	1st Reg. F. A. 8th Reg. Cav.
			2d	
			3d	
		2d	4th	1st Bn. Eng. Co. A, Sig. Corps.
			5th	
			6th	
		3d	7th	1st, 2d, 3d and 4th F. Hosp.
			8th	
			9th	
	2d	1st	10th	2d Reg. F. A. 9th Reg. Cav.
			11th	
			12th	
		2d	13th	2d Bn. Eng. Co. B, Sig. Corps.
			14th	
			15th	
		3d	16th	5th, 6th, 7th and 8th F. Hosp.
			17th	
			18th	

The three remaining corps will be organized as above, divisions, brigades, etc., being properly numbered. The last division will consist of two brigades and one regiment.

The Cavalry Division.	1st Brigade.	1st Regiment	
		2d Regiment	
		3d Regiment	6 Batteries Horse Art.
	2d Brigade.	4th Regiment	
		5th Regiment	1 Co. Eng. (Mounted)
	3d Brigade.	6th Regiment	1 Co. Sig. Corps (Mtd.)
		7th Regiment	9th and 10th F. Hosp.

Second Requirement.

Infantry	111,240
Cavalry	18,540
Artillery	12,530*
Engineers	5,428
Signal Corps	1,350
	<hr/> 149,088

*Computed on the basis that a provisional regiment has three times the enlisted strength of a battalion + 3, the sergeant major, quartermaster and commissary sergeants.

FIELD WIRELESS OPERATIONS IN CUBA.

BY FIRST LIEUTENANT GEORGE A. WIECZOREK, SEVENTEENTH INFANTRY.

ALL movements of a military force teach us something. This article tells of something that we needed and that has been produced by the Signal Corps with the army of Cuban Pacification.

Our army has never had a field wireless organization trained as a unit, and it so happened that this movement produced it under the direction of the Chief Signal Officer, Captain William Mitchell, Signal Corps. The following few lines roughly describe the organization now operating with the army of Cuban Pacification.

Organization.

The field wireless platoon is commanded by an officer and consists of two sections. Each section is composed of three noncommissioned officers and six men. A noncommissioned officer and four men of each section are mounted. Each section is accompanied by an instrument wagon, which carries the equipment, instruments and rations. The men who are not mounted ride on the wagon.

Equipment.

The men are equipped as cavalry, except that a machete is carried in place of the saber.

Drill.

The organization is drilled like a platoon of cavalry, using the cavalry drill regulations. The instrument wagons are each considered as a squad.

Instruments.

The instrumental equipment consists of two complete "Telefunken" field wireless telegraph sets. Each set, complete in itself to open a station, consists of the following pieces:

- a.* Jointed antenna, with wires and guys.
- b.* Transmitter, with condenser.
- c.* Receiver.
- d.* Leather bag containing tools and extra parts.
- e.* Generator (small dynamo driven by a bicycle).



FIELD WIRELESS PLATOON AT DRILL.

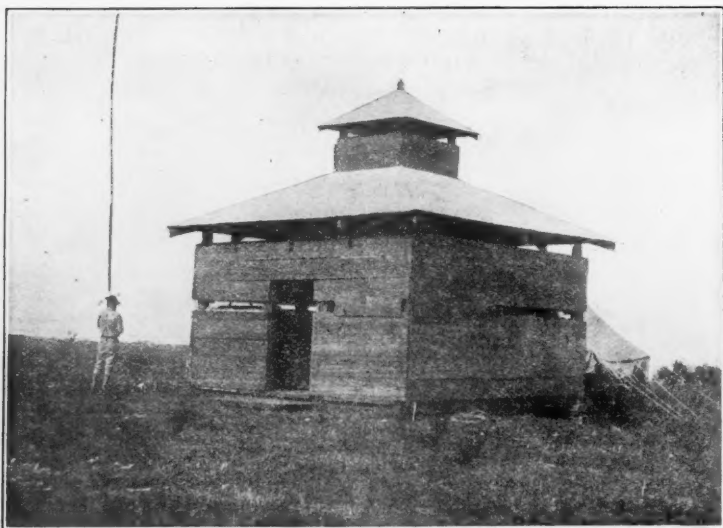
The total weight of the apparatus is 430 pounds, and it could easily be carried by two mules when wagon transportation is not practicable.

Results.

During some recent trials this organization has gone out into the field and set up the stations. Messages have been received and answered at a distance between twenty and

twenty-five miles (in an air line). The stations can easily be set up by untrained men in less than an hour. It is expected that further training will reduce this time at least one-half.

The results so far obtained have proved that a general commanding an army in the field can now keep in touch with his cavalry screen without going to the trouble of building flying field telegraph or buzzer lines. This will save an enormous amount of work and will also lessen the transpor-

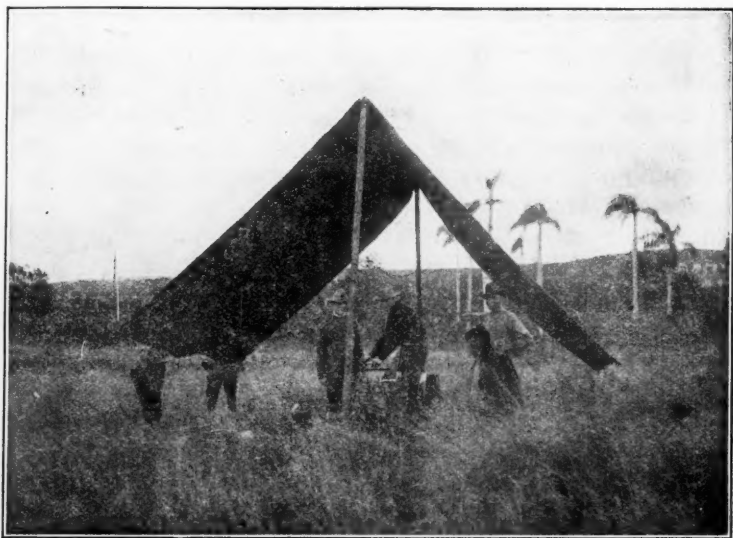


WIRELESS STATION AT WORK IN THE FIELD.

tation for the Signal Corps, as less material for construction need be carried.

The Signal Corps also operates a wireless station at Camp Columbia, a photograph of which is here given. This station keeps in communication with the navy and any other boats equipped with stations that may come within its range. The station is not powerful, but does very good work. It is hoped that we will soon have a more powerful station at this place, for we can then communicate with Key West, Florida.

The problem of wireless lines of information in the field now merits our close attention, for the science has to-day passed the experimental stage. It would be well if we could have our Signal Corps permanently organized into companies, each containing one platoon for wireless work.



WIRELESS STATION AT CAMP COLUMBIA.

MILITARY GUN SIGHTS.

BY FIRST LIEUTENANT G. C. LEWIS, EIGHTEENTH INFANTRY.

THE improvements in the efficiency of small arms in the last quarter century have made such sweeping changes in infantry fire effect as to revolutionize battle tactics. These improvements have been exclusively in the increase of rapidity of fire, greater range, and flatness of trajectory, but a natural barrier to further advances in those directions appears to have been set by the difficulty of supplying enormous quantities of ammunition to the advanced firing line, the limits of human vision in detecting neutral-colored uniforms, and the ultimate physical qualities of gun barrel material. A fighting man's efficiency is directly proportional to the number of hits he can make on a given target of equal area of exposure as his enemy, at a given range, and not to the number of projectiles he can discharge at that target in a given time. Clearly, unless we are to settle down to a long period of uniformity in tactics and equipment, an age of the magazine small-bore to take its place in military history with the age of chivalry or the muzzle-loader period, we must have an improvement in equipment, and that improvement can best be sought in the increased accuracy of small-arms fire.

As the New Springfield bullet has a radius of mean absolute deviation of fifteen inches at 1,000 yards, or about the width of a man at nearly the limit of clear human vision of the unit battle target, not much advance can be expected from increased accuracy of bore or ammunition. But in the means of accurately directing the bullet at the target, we find that we are still using upon the magazine small-bore

rifle the same methods and almost the identical blade and notch sights, except for elevating devices, that were used by our ancestors upon their excellent flint-locks. The ancient is not necessarily antiquated, but we are justified in investigating further the efficiency of our sights to discover if there is opportunity for their improvement by the application of the scientific principles developed in the centuries which have elapsed since their original design.

The U. S. Small Arms Firing Regulations, 1906, under the subject of "Sighting Drills," paragraph 18, says: "If any one of the sides of the triangle is longer than one inch, the instructor directs the operation to be repeated." The range for this exercise is twenty feet, and the foregoing paragraph in effect means that if a man firing in perfect weather, with perfect ammunition, with a rifle in a vise, made an error of less than fifteen inches to the hundred yards, or twelve feet eight inches at one thousand yards, due exclusively to his improper alignment of sights, it is satisfactory; but if he exceeds that limit he should be given some more instruction. When it is considered that the error of alignment with the rifle in the hand is much greater than when in a vise, and that while the incorrect sight alignment is not the greatest source of deviation, yet it enters into and complicates the correction of the greater personal and external atmospheric errors so that its minimization is a necessary preliminary to the correction of these greater errors, it is evident that accurate sighting is the very root of our desired improvement in accuracy.

The operation of sighting a gun consists in (1) the selection of a line of aim on the gun terminated by a point on each the front and rear sights; (2) the adjustment of that line of aim with regard to the axis of the bore to correspond with the predicted trajectory of the bullet by means of lateral and vertical movements of the sights; and (3) the holding of the ends of the line of aim in the line of sight between the eye and the target at the moment of discharge.

The principles involved are of three general classes: (1) optical, (2) geometrical, and (3) mechanical, and will be considered separately.

The Optical Principles.

It is necessary for uniformity in lateral and vertical corrections that the same line of aim be adjusted relative to the bore, and be placed in the line of sight in all sighting operations. Since the line of aim has no existence except as marked by its ends on the respective sights, it is desirable that those termini be identical in position and as nearly mathematical points as the vision will permit. Only one straight line can be drawn between two mathematical points, but an infinite number of lines of aim could be taken between the tip of the front sight and different parts of the rear notch or peep aperture with a corresponding infinitude of variations of large value at the target.

The governing factor of the size and character of the terminal points of the line of aim is the capacity of the vision. An understanding of the elements of optics is therefore necessary for the selection of the best sights, though the structure of the eye appears to have been strangely ignored in the selection of the existing sight designs.

Consider the image formed by a simple lens, L, Diagram 1. Under the law of lenses,

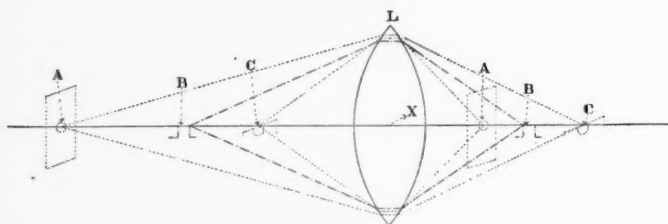


DIAGRAM 1.

$$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2}$$

in which f is the distance from the optical center, X , to the principal focus (focus of parallel rays); f_1 is the distance from X to any object, A , B or C ; f_2 is the distance from X to the images of the respective foci, A' , B' , C' . The images of the objects A , B and C , Diagram 1, at different distances

from the lens, L, will then be formed respectively at A', B and C'; but images of objects at different distances from the lens can not be formed at the same spot by the same lens.

The eye is provided with a light-focusing device called the crystal-line lens, LL, Diagram 2. The difficulty of seeing objects at different distances is overcome by a muscular alteration of the curvature of the lens, so that the focus of the rays from the object falls on the sensitive retina. But definite positions, F, E and D, of the lens are necessary for each distinct distance of objects A, B and C; therefore it is impossible to see three points in the same straight line from the eye at the same time. This may be forcibly illustrated by

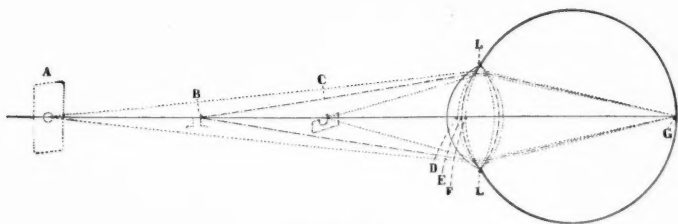


DIAGRAM 2.

the simple experiment of looking with one eye only at a man about 100 yards distance and bringing a pencil point before the eye about three or four inches from it, taking care to still see the man clearly. The pencil point will appear foggy and transparent though more solid at the center, and the width of this blurred border is almost equal to the apparent height of the distinctly visible man. The effort to see clearly the target, front sight, and rear sight simultaneously is an attempt at the impossible; two of the three objects must appear blurred in outline. The contrasts of color around the target are usually less marked, it is more subject to adverse atmospheric light effects, and further, the difference in optical accommodation between the front sight and target is less than between the two sights, so that the eye should be focused upon the target. It follows that the greatest blurring will be at the rear sight.

Let us examine the effects of this blurring upon the uniformity of position of the ends of the line of aim.

In Diagram 3, A is the front sight, B the target, and C the rear sight. Figs. 1 and 5 represent the ideal appearance

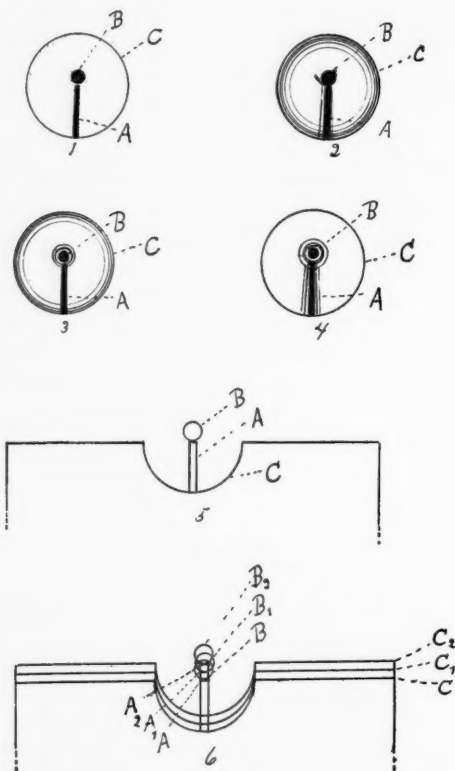


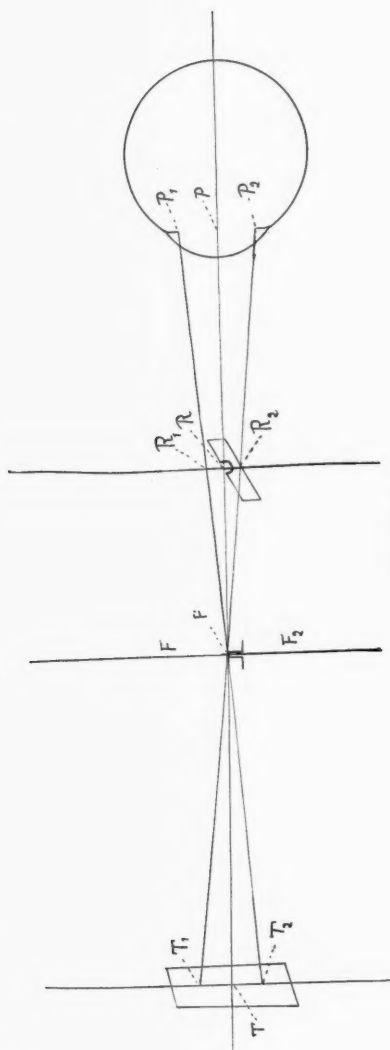
DIAGRAM 3.

for the peep and notch rear sights, all three points being clearly defined. This is an impossible condition, and the sights actually represent to the eye the appearance of Fig. 2, 3 or 4, accordingly as the eye is focused on the target, front sight or rear sight. Comparing the Figs. 1, 2 and 3 it is seen that the tip of the front sight has not been displaced

by the blurring of the rear sight, but is still in the center of the peep since the circles of blurring are concentric and the distortion is compensated at the ends of any diameter. This is true only when the tip of the front sight is *centered* in the rear peep. In the case of the notch sight, Fig. 6, Diagram 3, it is seen that the effect of the blurring of the rear sight is to elevate its apparent position to C_1 or C_2 , and a corresponding increase of amount of front sight, B_1 or B_2 is necessary to give the same impression to the eye. The peep sight, therefore, establishes a uniform definite line of aim, while the notch sight gives a variable rear terminus. This is true whether a half, full or fine sight is used, since the amount of front sight must be referred to a blurred band of haze instead of a line. If the amount of blurring of the rear notch, C_2 C, Fig. 6, would remain constant a man might remember and allow for its effect after a great deal of experience, as is in fact done in a measure in practice; but if the blurring is variable in degree and beyond the shooter's control the effect would be the same as aiming with a rear notch slide which crept or slid up or down the leaf a 100 yards or so without warning.

It is easy enough to calculate the amount of this blurring and determine whether it is a constant or variable. Diagram 4 illustrates this.

If the eye is focused for the plane $T T_1 T_2$, only points in that plane will appear as sharply defined points to the eye. A point at F will not be seen in the "extra focal" plane $F F_1 F_2$, but will appear projected into the "focal" plane $T T_1 T_2$ in the form of a "dispersion circle," a sort of hazy disk. The center of this disk is at the intersection of the focal plane with the prolongation of line through the center of the pupil, P, and the point F and its diameter is the geometrical projection of the diameter of the pupil, $P_1 P_2$, onto the focal plane, the point F as center of projection. $T_2 T_1$ is then the diameter of the circle of dispersion when the focal plane is beyond the object and $R_1 R_2$ is its diameter when the focal plane lies between the eye and the object, the law being the same in both cases.



In the similar triangle, $T_1 T_2 F$ and $P_1 P_2 F$,

$$T_1 T_2 : P_1 P_2 :: T F : F P \quad (1)$$

$$T_1 T_2 = P_1 P_2 \frac{TF}{PF} \quad (2)$$

When the focal plane is beyond the dim object this may be written—

$$D = p \frac{b - a}{a} \quad (3)$$

or when the focal plane is between the dim object and the eye,

$$D = p \frac{a - b}{a} \quad (4)$$

in which

D —diameter of circle of dispersion.

p —diameter of pupil.

a —distance of eye to blurred object.

b —distance from eye to distinct object.

These equations simply mean that the apparent blurring of the rear sight in the plane of the target when the latter is distinct, grows in direct proportion to the diameter of the shooter's pupil and the range, and inversely with the distance from the rear sight to the eye. Any condition, then, which will alter the diameter of the pupil of the eye, such as fatigue or change of light, will alter the amount of blurring in direct proportion, and as the variations in pupil diameter are over 300 per cent. from noonlight to dusk, such effect must be considerable in the case of the notch sight, but of no effect in the peep sight.

These errors of elevation from blurring were found experimentally to amount to as much as twelve inches per 100 yards of range for the notch sight under extremes of light conditions. The entire exemption of the peep from such uncontrollable errors is sufficient warrant for the dropping of the notch sight from the rifle.

To show experimentally the effect of these theoretical deductions the following experiments were made with twenty different types of rifles and sights, both sporting and military, including extremes of well marked types: The guns were placed on vises, on sighting standards heavily braced, and so arranged that the eye and shoulder were in the correct shooting position, and not at a variable distance and im-

proper focus as in the ordinary sandbag tripod. Triangles were then made in accordance with usual sighting drill methods, but at ranges of from fifty yards to three hundred yards, using disks graduated to give the same intercept as the A target bull's-eye at two hundred yards. Separate detachments of recruits and of sharpshooters from companies B, C, I, G, L and M, Eighteenth Infantry, were kindly furnished me by the respective company commanders, and the experiments extended over about four months, and were conducted under varied conditions of weather, wind, and time of day. The majority of the men were not informed as to the object of the tests. The averages of many hundred experiments are given in the following table, but it must be pointed out that individuals frequently had results at great variance with those tabulated. Even large detachments showed discrepancies as to the numerical factors of deviation, but no detachment gave results at variance with the general trend in comparison of two well marked types of sights. The tabulated results may be relied on for comparative tests of any two sights, but not as to the quantitative factor.

Gun.	Kind of Sight.	Distance in inches from eye to sight.		Distance between sights in inches.	Re-crruits.		Sharpshooters.		Falling Light.				
		Front.	Rear.		Mean breadth of triangle per 100 yds.	Mean height of triangle per 100 yds.	Mean breadth of triangle per 100 yds.	Mean height of triangle per 100 yds.	Vertical displacement of triangle centers.	Increase of triangle area.			
Springfield	1903, .06 peep	35.82	12.5	23.32	1.15	1.28	1.02	.88	none	About 50%			
Springfield	1903, notch	35.82	12.5	23.32	2.44	1.88	1.26	1.56	7.0	About 150%			
Springfield	1903, .04 peep	35.82	12.5	23.32	1.22	1.26	.81	1.04	0.5	About 100%			
Springfield	1905, .05 peep	35.8	13.4	22.4	1.19	1.32	.90	.94	none	About 50%			
Springfield	1905, notch	35.8	13.4	22.4	2.31	2.38	1.23	1.60	8.0	About 150%			
Krag Rifle.	1901, notch	41.5	17.0	24.5	1.76	2.19	1.21	1.48	6.0	About 150%			
Krag Rifle.	1901, .04 peep	41.5	17.0	24.5	1.16	1.18	.81	.48	none	About 150%			
Krag Rifle.	1901, .06 peep	41.5	17.0	24.5	1.06	1.15	.84	1.08	none	About 100%			
Krag	1896, notch	33.0	18.8	14.2	2.68	1.92	2.16	2.69	12.4	About 200%			
Carbine	leaf down	33.0	16.4	16.6	2.04	2.38	1.28	1.56	10.0	About 200%			
Carbine	leaf up	35.5	4.5	31.0	1.00	.92	.64	.76	none	About 50%			
Winchester	.07 peep	26.5	2.0	27.5	3.0	3.0	24.5	.92	.88	.48	56	15.0	About 50%
Stevens	.04 globe rear	26.5	2.0	27.5	3.0	3.0	24.5	.92	.88	.48	56	15.0	About 50%
Stevens	.07 aperture	26.5	2.0	27.5	3.0	3.0	24.5	.92	.88	.48	56	15.0	About 50%
Winchester	12 peep	35.5	4.5	31.0	1.24	1.31	1.00	1.21	1.1	none	none	none	none
Springfield	Telescope	2.0	2.0	2.0	.42	.46	.26	.31	none	none	none	none	none
Springfield	Prismatic	28.7	16.5	12.2	1.94	2.71	13.0	About 200%					

The following observations were made in regard to the effects of failing and changing light:

1. The .04 aperture at sixteen inches from the eye quickly becomes useless in failing light, and cannot be used to advantage when the sun is near the horizon or for indoor work.
2. The .06 aperture at sixteen inches from the eye could not be used in poor light which was still strong enough to show the target clearly when not sighting.
3. The .07 and .12 peeps at three to five inches from the eye could be used in very dim light, such that the target could only be dimly seen when not looking through the sights. The larger aperture was distinctly clearer than the notch.
4. The notch sight was subject to great displacement vertically of the triangle centers from failing light and to most irregular lateral displacement from glint of strong light on the shoulders of rear notch. Men who were expert with the notch could make small triangles, but did not seem to be exempt from these sudden irregular displacements in the midst of a series of closely grouped sightings.
5. The peep sight gave practically no vertical displacement of triangle centers until the light became so weak that it could not be used. It was almost entirely free from the irregular lateral displacements.
6. The telescopic sight gave no lateral or vertical displacement of triangle centers.
7. The peep on the front sight can only be used in very strong light and with a clear target.
8. The bead tip to front sight is a distinct aid in centering the front sight in the rear peep, but is of no value when the notch sight is used.

The net result was strongly in favor of the peep sight, but indicated a serious defect in the size and position of the peep as issued. Many men who could not use the small .04 inch peep at thirteen to sixteen inches from the eye obtained much better results with the large Lyman peep at five to six inches from the eye. No man was found who did not get better results with the .06 to .10 peep at five to eight inches from the eye than with the notch, though

some few old soldiers did better with the notch than small peep, owing to long training. The recruits with no target range practice showed much better results with the peep than with the notch. With uniform light the average lateral error for the notch sight was but little more than that of the peep, but the vertical error averaged much greater. Tests for variable light effects were made with scudding clouds and from before sunset to dark at five-minute intervals. The guns were not moved between the marking of successive triangles in this test and the centers of these triangles should, therefore, approximately coincide as long as the sights continued to establish definite uniform termini to the line of aim. With the peep sight the triangles grew slightly larger as the light failed, due to indistinctness of the target, but the centers of the successive triangles were stationary. With the notch sight the triangles became larger and the centers crept gradually down the target, showing in many cases a vertical drop of over twelve inches to the 100 yards. The .04 and .06 apertures at thirteen and sixteen inches from the eye admitted so little light that they were useless in weak light, but the .04, .06 and .1 apertures at three to five inches from the eye can be used in weaker light and to better advantage than the notch.

The peep on front sight was quite useless in even strong shadows or when the sun was near the horizon, appearing as a greyish bead front sight tip.

Another advantage of placing the peep closer to the eye is the increased field of view. By bringing the .06 aperture from seventeen to three inches of the pupil, the field of view is increased nearly six fold and the illumination of the target is much increased. The average eye cannot focus at a point closer than eight inches, and placing the peep within that radius of the eye, relieves the eye of the strain of unconscious effort to see the rear sight clearly. With the rear sight as close to the eye as possible, the sights are more quickly aligned in snap shooting. No one who has not tried quick aiming with a peep at three inches from the eye can appreciate the value of this feature. Since the peep sight is independent of the blur, these advantages are easily gained

for it, but are directly opposed by the requirement of the notch sight which should be as far from the eye as possible, as its edge must be as little blurred as possible.

A large peep is required for snap shooting and for work in the twilight, and a somewhat smaller aperture can be used advantageously for deliberate firing, though the deviation with the large peep at three to five inches from the eye is very small, as the center is clearly defined. There is also a certain amount of individual variation in eye focusing so that an adjustable aperture is desired. A .1 inch peep with a simple device consisting of a ring of .05 inner diameter, hinged so that it can be turned up into the aperture to reduce it, appears to meet the requirement of the largest number of men. The device is not liable to injury, and if broken still leaves the .1 aperture available, which is the best size for general work. A bead front sight is shown to be a distinct aid to most men in centering the peep, though not of value with the notch sight. It is particularly useful in weak light. The peep front sight is of value in a very strong light and for deliberate fire, for reasons previously given.

The idea current in the army for many years, that the peep sight is a useless refinement, which might be used by experts for target work, but which could not be taught to hasty levies nor used in battle, is a gross error, which found some grounds in the small size and great distance from the eye of the issue peep. Quite the contrary is the case. The notch sight requires many times more instruction for its use than does the .06 aperture of the 1901 and .05 aperture of the 1905 sights, while with a peep at five inches from the eye, as a Lyman, aim can be taken more quickly for rapid fire and skirmish work by a recruit with but little instruction than by the most expert shot with a notch sight. The peep sight has been used by only about one-half of the competitors in the division competitions of 1904 and 1905, but only a small fraction of notch sight users obtained places on the teams, many teams not having a single member who used the notch at any class of his fire. This may be merely a coincidence, but, if so, it included the Sea Girt matches in its sweep, for an overwhelming majority of the national match

winners used the peep. This is in spite of the defects of size and position of the issue peep. The 1903 Springfield .04 peep is so very defective in construction that many advocates of the peep were forced to use the notch for skirmish work at the 1906 competitions. The abolition of the notch and adoption of the bead front sight and a peep of .06 to .1 inch aperture at five inches from the eye would seem to be the first step in an effort to increase the accuracy of infantry fire. The superiority of the proper peep over the notch can no longer be dismissed as a whim, opinion, or chance result of prejudice and practice, for it is a mathematical fact based upon the actual physiological structure of the eye, an unalterable condition of established magnitude which cannot be ignored.

The Geometrical Principles.

The bullet after leaving the gun is acted upon by a number of different forces, gravity, wind, gyroscopic action, etc., which tend to alter its path according to certain definite curves. Since a position for the rear sight exists which will correct any given variation at the target, it is evident that a curve can also be found for the rear sight which will correct the deviation on the target resulting from the action of any particular force. The scale of elevations on the rear standards, in this case a straight line, which offsets the action of gravity, is the simplest of these correction curves. The drift curve on the standards of the 1901 and 1905 model sights, which corrects for the deviation due to the flip of the barrel and the rotary action of the bullet, is another example. The ideal sight from a geometrical standpoint would be one which had a separate adjustment curve for each of the dozen or so forces which affect the bullet, but the mechanical requirements of simplicity and strength, as well as the excitement of battle prohibit its construction.

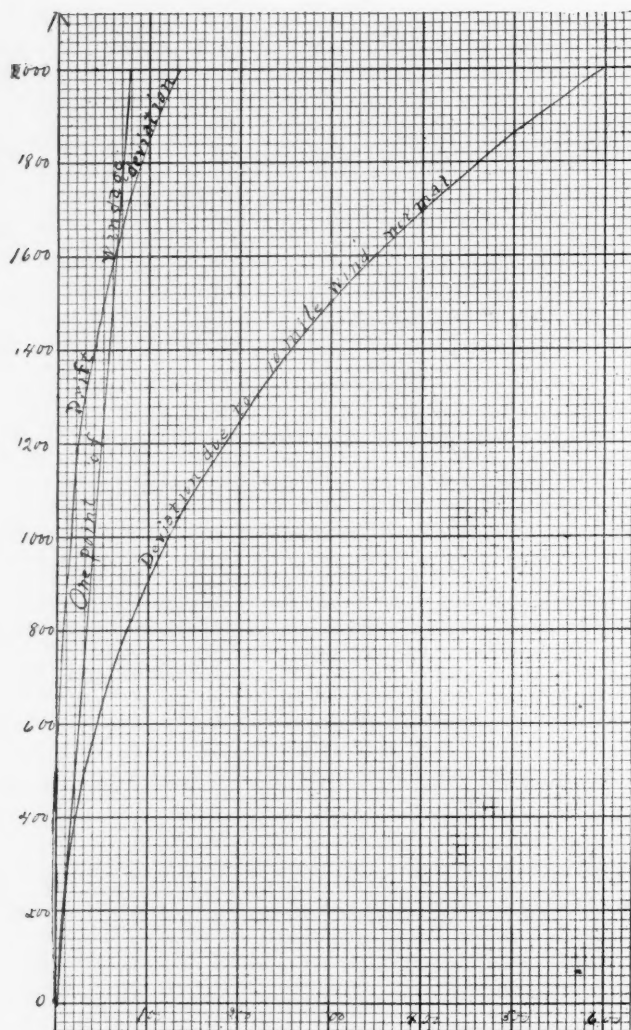
To a curve such as the drift curve, which requires no additional parts, and which is adjusted automatically in changing elevation, no possible objection can exist, and its omission is a wanton sacrifice of the best powers of the rifle.

Diagram 5 shows the relative value of the drift, which is corrected automatically, and of the deviating component of a ten-mile wind, which must be corrected by the separate operation of turning the wind gauge to the number of points indicated by dividing the deviating component for the range and the velocity of wind by the value of a point of windage at that range. Since the value of a point of windage is equal to the range in hundred of yards multiplied by a constant, four inches for the Springfield, while owing to the loss of velocity of the bullet, the deviating component is a variable which increases much more rapidly than this, it follows that a different adjustment for the wind gauge must be made every time the range is altered, even in constant weather conditions. The amount of this alteration can be seen from the following table for a thirty-mile wind normal to the plane of fire of the thirty caliber Springfield.

TABLE OF WINDAGE CORRECTIONS.

Range.	Value of One Point in Inches.	Deviation of 30-mile Wind in Inches.	Number of points Required for Correction.
200	8	18	2 $\frac{1}{4}$
400	16	60	3 $\frac{1}{4}$
600	24	129	5 $\frac{8}{16}$
800	32	234	7 $\frac{5}{16}$
1000	40	375	9 $\frac{3}{8}$
1200	48	555	11 $\frac{1}{8}$
1400	56	783	14
1600	64	1059	16 $\frac{1}{2}$
1800	72	1392	19 $\frac{1}{2}$
2000	80	1785	22 $\frac{5}{8}$
2200	88	2247	25 $\frac{9}{16}$
2400	96	2844	29 $\frac{3}{8}$
2500	100	3144	31 $\frac{1}{4}$

The alteration of windage with change of range is thus seen to be very high, and to follow an irregular curve which it would be most difficult to carry in the memory, as it would vary with each wind velocity, even if there were time in battle to make the separate adjustment. The chances of getting windage corrections made at each change of elevation, in repulsing a charge or in an assault with rapidly changing ranges, are slender.



Abscissae, 1 inch=100 inches deviation on Target.

Ordinates, 1 inch=200 yards range.

(Cut reduced one-half from original drawing.)

DIAGRAM 5.

The following described device, on which a caveat has been taken, has been devised by the writer with the object of having the windage correction made automatically with each change of elevation, for any given constant condition of wind. In Diagram 6, $P J W D$ is the horizontal projection and $P E E_1 D$ is the vertical projection. P is the pivot point of a wind gauge base and F is the front sight. The elevations for the proper ranges are laid off on $P E$ and the graduation points connected with F as a vanishing point. A sight at any point, E_1 , on the line EF will then have the elevation of 2,500 yards corresponding to that of E . Similarly, points of windage are laid off on $P J$ and connected to

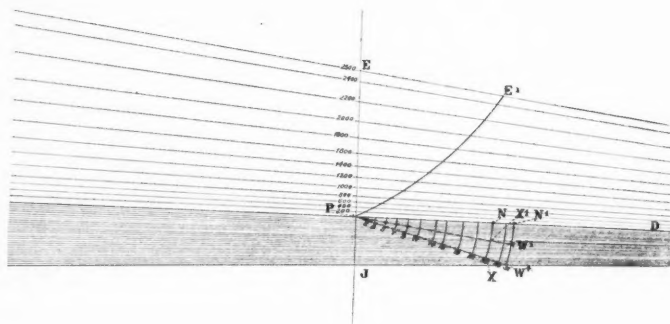


DIAGRAM 6.

the vanishing point F . The point, W , is then plotted, having $31\frac{3}{8}$ points of windage at a distance from the pivot, P , corresponding to the 1905 sight base length, and points laid off on the line, $P W$, corresponding to windage points in the foregoing table. Vertical lines from these windage values to the corresponding range vanishing lines are the ordinates for a curve for an inclined sight standard. If the base bar is moved up or down the elevation scale, $E_1 P$, the windage is automatically increased or decreased to correspond to the range, since the standard, $E P$, lies in the vertical plane over

P W, and therefore one adjustment is needed. If the standard is turned into the vertical plane of P W₁, then:

$$\begin{aligned} N W : X N_1 &:: N P : N_1 P \\ N W_1 : X_1 N_1 &:: N P : N_1 P \\ \text{therefore, } N W_1 : X_1 N_1 &:: N W : X N_1 \end{aligned}$$

All ranges will then have the corresponding windage corrections of their respective projections in the horizontal plane, which have all been reduced in the ratio $\frac{N W_1}{N W}$. This is in fact a system of polar coördinates instead of a corrective curve in a single plane.

By graduating N W to read velocities instead of points, corrections for windage in connection with change of range can be obtained with only a slight bending of the standards and the alteration of the position of the sight base pivot and without the addition of a single part. By having four successive concentric scales, one behind the other at N W, with graduations reduced to correspond to diminished effect of wind not normal to the plane of fire, and with the clock hours opposite each proper scale, all the complicated mental effort for correction due to the change of direction of the wind can be eliminated by simply setting the index to the proper scale. This does not require any extra pieces to be added. The gauge would then be set at the proper velocity and direction of wind and would not have to be touched as long as the weather conditions were constant, no matter how the range varied. An expert rifleman of two years' qualification recently made two successive skirmish runs of ninety-five and twenty-five, the latter being due to failure to allow for a change from a 9 o'clock to a 7 o'clock wind. Correction on the sight scales for changes of direction of wind would appear to be the only way of getting the subject handled by the average enlisted man even in time of no great excitement.

Corrections for barometer, thermometer and hygrometer are so delicate that they would not be made during battle. These corrections are for conditions extending over several hours, and are very nearly proportional to the range. It would therefore appear feasible to have a slow motion which

would raise or lower the peep in the bar itself to correct for changes in altitude, temperature, etc. These corrections could be made before going into battle under supervision of an officer, so that the rifle would then use the elevations as graduated, and not a hundred or two yards, more or less, as at present, at most of our inland posts. The value of this adjustment in connection with a good range finder is not to be disputed, and is simply a question as to its mechanical feasibility.

Another geometrical consideration is the distance between sights. The average human eye can see an object clearly which subtends an arc of about $40''$, that being the lower limit of visual definition. But in the case of the front sight, which is not in proper focus, the limit is probably two or three times as large. Assuming that $.02$ of an inch is the smallest defined point that can be seen at the front sight when looking at the target, it is evident that an error of less than that amount would escape detection. If $.02$ of an inch deviation takes place in a space of one foot between the sights, it would have three times the effect on the target as if the same error had occurred three feet apart. Great distance between sights is therefore to be sought, and, as the front sight is fixed, this distance can only be increased by moving the rear sight further back. This advantage can be obtained without detriment in the peep sight, but in the notch sight the optical and the geometrical principles are in direct conflict.

Mechanical Principles.

A military sight must, in the natural order of campaign conditions, be exposed to severe strains and shocks, and it must be built with that end in view. It is not practicable to expect men who are scarcely able to march to keep their weapons as well protected as under garrison conditions, and all adjustments should be such as to function without clogging when exposed to dust and sand. These conditions prohibit the use of small or delicate parts, but do not prevent the making of fine adjustments if sufficiently

massive parts are used in the slow motion mechanism. The importance of simplicity in our earlier sights; notably the target 1896 model, seems to have been greatly exaggerated. It would be most interesting to compute the number of rifles put out of action in actual service, for the 1901 sight, as compared with the number of rifles which were fired uselessly, with trajectories from thirty to forty feet from the line of sight, with the 1896 sight. Such a comparison could scarcely fail to be overwhelmingly in favor of the more accurate sight.

Weight is of great importance in a hand firearm, but a few ounces on the sight which will effect the saving of pounds of ammunition is a sound economy. All rear sights should be provided with a slow motion mechanism, preferably arranged to shift the peep in the sight bar itself. The elevation standards are particularly exposed to shock, and should be built strong, with a spring device which permits them to yield easily to the front or rear and escape injury. The 1903 sight can not yield in this manner, and its elevation standard is particularly subject to damage, where the 1901 and 1905 models escape without injury. Adjustments should be so arranged as not to work loose nor slip during fire. The sight bar of the "simple" 1896 sight was particularly prone to fall during firing, a fault which could have been easily corrected by roughening the edge of the standard. The heavy notches of the 1903 standard, which only permit adjustment at twenty-five yard intervals, are a step in the opposite extreme, and are only less objectionable than a smooth standard.

Qualities of an Ideal Sight.

From the foregoing discussion of the principles involved it would appear that the following are the qualities which the ideal sight should possess:

1. Optical:

- (a) Mark ends of line of aim accurately when the eye is focused on the target.

- (b) Uniform appearance to the eye under variation of intensity or direction of light or when the eye is fatigued.
 - (c) Wide field of view around the target.
 - (d) Be located easily by the eye for snap shooting.
2. Geometrical:
- (a) As long a distance between sights as possible.
 - (b) Adjustment so as to correct for all deviations of bullet caused by regularly acting forces.
3. Mechanical:
- (a) Strength and durability of mechanism.
 - (b) Speed in making large adjustments.
 - (c) Vertical and lateral slow motion mechanism for short distances.
 - (d) Adjustment screws or clamps large and easily grasped in excitement.
 - (e) Adjustments secure against slipping from shock of discharge.
 - (f) Adjustments so co-related that one movement may correct for several related errors, that is, a change in elevation which will also correct for drift and windage, for example.
 - (g) Simplicity.
 - (h) Graduations easily read.

It is easily seen that some of these requirements are contradictory, and that we can only hope to approximate this ideal closely by judicious compromise. Let us examine the issue sights since the adoption of the thirty-calibre rifle with a view to seeing how they compare with the foregoing standards.

Analysis of Rifle Sights.

The earliest model of the thirty-calibre sight was that for the Krag, model 1896. It is not usual to see so many defects assembled in a single piece of mechanism, and it is difficult to understand what purpose its construction could serve except as a demonstration of the possibility of a defective sight neutralizing the effect of a good rifle. Under

usual weather conditions, the better a man could aim the less chance he had of hitting the target, for the point aimed at was the one point which the bullet could not strike. Excellent target practice has been had with this sight by the device of placing an oil can at the proper place on the target butt, from three to twenty feet distant from the bull's-eye, and aiming at the can, the position of the latter being shifted according to signals. A carping critic, however, objected that target practice was a preparation for the work of hitting insurrectos, and these latter had first to be caught before the tin can could be properly placed, and after they were caught there was no use in attaching the can, whereupon the post commanding officer suspended the use of the oil can wind gauge. The enumeration of the defects of this sight is somewhat extensive. Its elevations were not correct within one hundred yards at the majority of posts. The standard was smooth so that the sight bar frequently fell in firing. There was a difference of about eight per cent. in the distances of the rear sight from the eye in the raised and lowered positions, giving changes in focus and blur. The distance between sights was entirely too small. There was no peep, no wind gauge, and no drift gauge. Simplicity was put forward as the strong feature of this sight, but it is hard to understand how a slight bend in standards to correct for drift and a few ridges to prevent slipping would have complicated its action.

The model 1901 sight is a long step in advance. It was provided with a peep which was at first .04 of an inch in diameter and entirely too small. This was raised later to .06 inch, which gave much better results, though still too far from the eye, and having too short a distance between sights for the best work. The wind gauge is serviceable, but has no slow motion. In using the notch sight at ranges under five hundred yards the standards are down and the notch is at a variable distance from the wind gauge pivot, as the ranges are changed. The amount of deflection of the notch from the axis of the bore for one graduation on the windage scale is directly proportional to the horizontal distance of the notch from the wind gauge pivot. The sight bar at the four

hundred yards elevation is quite close to the pivot, so that the value of a point of windage at that range, with the standards down, is less than one-third of the value of what the same graduation should be, did it follow the rule of varying directly with the range as when the standards are up. This does not occur with the peep, as the standards must be raised in order to use it, and it greatly complicates the windage correction for those ranges at which the notch sight is flat. With the standard up, a point is equal to 5.88 inches multiplied by the range in hundreds of yards, so that the wind gauge must be altered anyway at each change of range, as previously explained in the discussion of geometrical principles.

The model 1903 Springfield sight is set closer to the eye than the Krag sight, and is to be credited with that improvement, though still too distant for the best results. The peep is .04 of an inch in diameter, and has not enough metal above it to show clearly any solid rim when blurred and out of focus. The wind gauge has a slow motion. There is no drift gauge, but the notch is set .021 inch to one side of the axis of the bore as a compromise, which neutralizes the drift up to about one thousand yards. The sight is structurally weak, as the sight bar forms a solid fulcrum against the elevation curve of the base, over which the standard must bend or break under shock.

The 1905 model of Springfield sight is the best sight ever placed on a military arm in the United States. It has a peep of .05 inch diameter with white metal rays pointing to the aperture to aid in catching the peep with the eye. The sight is in the wrong position—too far from the eye for the best results. The standards yield either to the front or rear under shock, and so are not liable to damage. There is an excellent slow motion wind gauge, but the windage must be altered with every change of range. The standards have a roughened surface to prevent slipping of the sight-bar, and are also curved for a drift gauge. There is no slow vertical motion. The front sight base is roughened to prevent the reflection of light.

An examination of some of the best sporting and foreign military sights may be of interest in comparison with our issue sight.

The Lyman receiver peep sight for the Winchester 30-40 with bead front sight, was the best simple sighting device tested, from an optical standpoint. It had a distance of thirty-one inches between sights and a peep which could be varied in size by a bushing. The rear sight was from three to five inches from the eye. It could be centered very quickly in snap shooting, gave no strain on the eye and could be used in poor light. Its adjustments were defective, as there was no wind gauge.

The Warner and Swasey prismatic telescopic sight gave smaller triangles and less deviation in failing light than any other sight tested, and from an optical standpoint is many times better than the best sight not provided with lenses. It is a collimating telescope on the same principle as a transit. Its magnifying power is 5.6 illumination greater than the naked eye, and maximum field thirty-six degrees. It is particularly valuable for rapid fire and snap shooting at mid and long ranges, as there is only the one point, the intersection of the cross hairs, to be placed on the target, and the error of alignment of two sights is eliminated. This sight gives markedly better results than do either the notch or peep sight in firing at either a target or a bright reflector illuminated by a powerful search-light.

It is the collimating feature of the telescopic sight rather than the mere magnifying of the target which forms its chief merit. Sir Walter Grubb has developed a collimating sight, designed to overcome the lack of permanence of adjustment of cross hairs by the use of a set of prisms, one of them being partly silvered and having a cross scratched upon it which appears to the observer to be projected into the plane of the target. This sight is not necessarily magnifying.

The King Optical Company has produced a set of lenses which are attached directly above present military sights so that the target is seen as a magnified image setting upon the normal unmagnified front sight, thus giving magnification

of the target without collimation. Aim is taken with the ordinary sights at this magnified image. As only the published accounts and diagrams are available concerning these two sights, and no tests were made with them, no further details are considered necessary in this paper, though it is believed they would repay experiment.

It appears that there was one defect which was omitted in the construction of the 1896 Krag sight, and which is very well illustrated in the sight of the French carbine of 1891. This sight is only graduated for every two hundred meters, and the intermediate adjustments can not be made. Otherwise it has all the defects of the 1896 sight, including a twelve inch space between sights.

The Mauser and Mannlicher sights all showed some of the defects of the 1896 sight. None of them was provided with a peep sight or wind gauge and the notch was very coarse. An inspection of these sights makes plain the force of the arguments foreign strategists are constantly advancing in regard to "beaten zones," "sheets of lead," and "hail of bullets." Only by such means could such arms be effective.

It is believed that the requirements of the ideal sight as previously set forth, can best be approximated by compliance with the following specifications:

1. The sight to be located on the receiver or small of the stock.
2. The standards to be curved for drift and wind corrections, as previously explained.
3. A slow motion elevation mechanism to be provided for moving peep in the bar itself over an arc of about 20'.
4. The exclusive use of the peep sight to be required. This peep to be provided with a bushing for changing the diameter from .06 to .12 of an inch.
5. A slow motion horizontal mechanism for the wind velocity scale to be provided.
6. Four concentric scales for the wind gauge with graduations diminished proportionally to the deviating components of 3:00 o'clock, 2:00 o'clock, 1:00 o'clock and 12:30 o'clock winds, with the movable index covering all four.

The ends of each scale to be stamped with the proper hours for all quadrants.

Such a sight would decrease the labor of preliminary instruction twenty-five per cent., and would greatly enhance the efficiency of green troops. Any man who can tell the time of day and can read could set such a sight for a ten-mile 1 o'clock wind, but it takes a great deal of instruction to convert deviating components according to the cosine of the angle of deflection, multiply the range by the constant of one point and divide the deviation thereby, or just guess at it, as is at present necessary. The mere putting of the clock face figures on the present wind gauge would save much error, as many men have difficulty in telling which direction to move the gauge for even a right or a left wind. Those men can all read.

SIGHTING TRIANGLES AT 100 YARDS.

Scale = $\frac{1}{8}$.


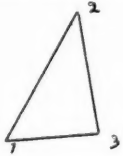


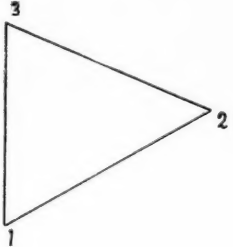





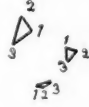





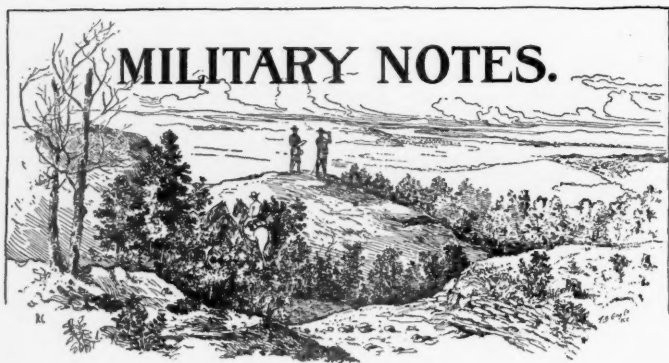
Name	.06 peep	Notch	Telescope
Recruit BRADFORD			
Recruit BAKER			
First Sergeant SPICER, Expert Rifleman	 	 	 
Private HILL, Sharpshooter		 	

DIAGRAM 7.



CHIEF OF CAVALRY.

Shall We Have a Chief of Cavalry?

IS there a need in our service for a chief of cavalry? If so, how shall we proceed to have the office created and filled?

We have here two questions of vast importance to the cavalry. Who is to answer them with authority? Certainly not the infantry nor artillery. They are questions that essentially concern cavalrymen, and to cavalrymen we naturally look for the answers. If the artillery, when confronted with similar questions a few years ago, had not itself answered them, it would not have a chief to-day. It satisfied the War Department of the necessity for a chief of artillery, and forthwith the office was established. The experiment, if the application of so fundamental a principle in organization may be called an experiment, has given such rapid, splendid and abundant results that it becomes a valuable precedent to assist the cavalry in a similar enterprise. The

artillery broke the ice; it convinced a doubting Congress of the reasonableness of its proposition. The ford is still open, and there is nothing to prevent the cavalry from crossing except its own indifference and its willingness to camp on the wrong side of the stream. Let it once convince the proper authority, be it Congress or the President, that the efficiency of the mounted service demands that its energies be coördinated by a chief, and the necessary legislation or authorization will be immediately secured.

Army legislation and regulations, as a general rule, are intended to promote the best interests of the service and of the nation. If they sometimes fail in their purpose, is the army entirely free from blame? Congress and the President are necessarily guided, in matters affecting the army, largely by the recommendations of the War Department. If such recommendations are not made and persisted in with convincing repetition, the blame for unwise or insufficient legislation rests on the army. If the cavalry fails to present reasons why it should have a chief, but continues in its present apathetic attitude to this important matter and refuses to discuss it, it can not shift the responsibility for resultant inefficiency. Decidedly, it is up to the cavalry.

To the first of the questions proposed, the cavalry has but one answer. The cavalry needs a chief as surely as a troop needs a captain, a squadron a major, or a regiment a colonel. The answer to the second is as simple, and has been suggested in what precedes. It is, "Convince Congress." Indeed it may be necessary to convince the President only, for it has been pointed out by General Carter that the President has authority, without additional legislation, to create the position.

But how is Congress to be convinced? By the seven hundred and fifty officers in the cavalry, to say nothing of the large number of retired officers who have not lost interest in the service. Nothing could be simpler. A little thought and energy on the part of these officers, and a willingness to give the service the benefit of their views, are all that is necessary. The JOURNAL has offered its pages for such an exchange of ideas, and a few excellent articles have already

appeared. But the ideas of a few, no matter how excellent, are not sufficient. The views, pro and con (if there are any cons) of all or a majority of the cavalry officers are needed. Be certain that you help to form this majority. Such a series of contributions, expressing the deliberate opinion of the cavalry service, free from that element of personal interest which so often vitiates recommendations for army legislation, and inspired only by an honest desire to promote the efficiency of the service, could not fail to be convincing.

The later disposition of them can be safely left to the Executive Council of the Cavalry Association.

Shall we have a chief of cavalry? Let the cavalry decide.

X.

"A LESSON IN PICTURE," CONTINUED.

BY CAPTAIN MATTHEW E. HANNA, THIRD CAVALRY.

I WISH to suggest a slight modification of the hand tentatively adopted by the War Department in General Order 146. The order prescribes that the bights of both reins shall fall to the right of the horse's neck, *i. e.*, to the right of the right reins. With both bights falling together it is difficult to sort out a particular set of reins, and the result is confusion and uncertainty in emergencies demanding an instantaneous tightening of the curb reins. By allowing the bight of the bridoon reins to fall to the right of the horse's neck and the bight of the curb reins to the left of his neck, the two sets of reins are kept separate and distinct at all times, and the trooper knows just where to reach to find either pair. The reins fall naturally in this position if the bridoon reins only are held *under* the thumb, the bight of the curb reins passing out of the hand *between* the thumb and first finger. The hold on the reins is thereby made more secure and the hand does not feel so full of reins. The change may seem trifling, but my own experience of several

years with bit and bridoon has convinced me of its great value.

The occasions when increased pull on the reins is necessary to insure the proper control of the horse often come without warning, and at such times the action of the rider must be swift and certain. Moreover, the trooper's right hand will not always be free to assist the left, and the teeth may have to be used instead. In addition, with the two sets of reins separated, and each in a particular place, the trooper may adjust the reins by "touch" alone, and the eyes need not be taken off the objective.

I believe the advantages of this change will appeal to any horseman at one trial, and I have not been able to discover any disadvantages.

THE McCLELLAN SADDLE.

FORT KEOGH, MONTANA, November 16, 1906.

The Military Secretary, Department of Dakota, St. Paul, Minn.

SIR:—In reply to letter from your office dated October 31, 1906, relative to the present cavalry saddle, I have the honor to report as follows: This saddle as used by Troop L, Sixth Cavalry, has been subjected to the following severe and unusual tests since July 15th, last. First, ridden by fifty men on a continuous march from Crawford, Nebraska, to Maneuver Camp, near D. A. Russell, Wyoming, and return; total distance covered, 452 miles, half the trip, hot and dry and very dusty; returning, cold, snowy and wet. Gaits, walk and trot; saddles lay in shelter tents or on the ground when not in use.

Second, ridden by troop; average number present at daily maneuvers or drills mounted, forty-two men; average time used seven hours—all three gaits used; total distance covered, about 400 miles; country very rough and broken; weather varied.

Third, in campaign against Ute Indians, seventeen days; saddle ridden by forty-three men, daily use about ten hours, weather dry and cold; country broken, and on days when roads were not followed due to scouting, very rough; distance traveled, 374 miles; gaits, walk and trot.

The following facts are given in connection with this severe service the present saddle has been put to this year:

The saddle in no case rode forward on the withers in any manner to cause injury to a single horse or annoyance to his rider.

But one horse had a sore back, and that caused by the rider's pack being poorly adjusted. Not a single saddle was rendered unserviceable to a degree requiring the action of an inspector, and but a few minor breaks of different fastenings were noticed or reported by the riders. As the troop started in the mornings, the men were cautioned not to cinch too tightly at the outset, but examine saddle, blanket and cinch at first halt and adjust them to the horse.

The age and conformation of the troop horses differed to a degree giving a perfectly honest test, and the conclusion which I believe may be honestly drawn from the above facts is, that the present saddle is the only one that could have sustained the usage shown with such results, and that I do not believe if any saddle in Troop L had ridden forward and thrown the rider out of place, that the record of no sore withers could have been cited.

Very respectfully,

GEO. P. WHITE,

Captain Sixth Cavalry, Commanding Troop L.

CAVALRY EQUIPMENT.

(The following short articles on this subject are taken from letters addressed to Captain Charles D. Rhodes, Sixth Cavalry, who wrote an article entitled "Cavalry Equipment," which appeared in the April, 1906, JOURNAL.)

FORT DES MOINES, IA., April 18, 1906.

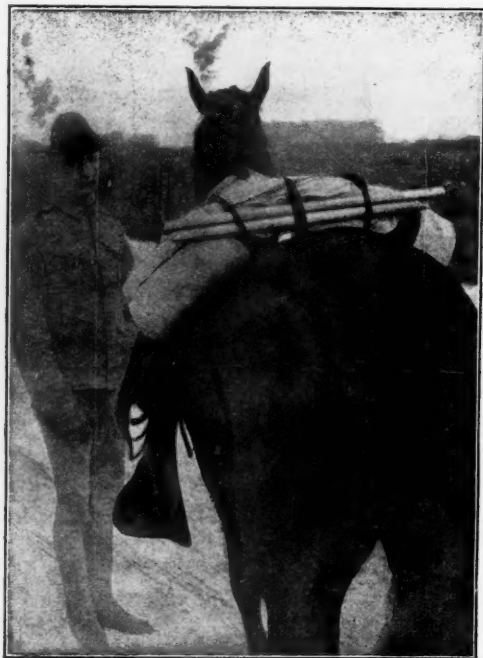
My Dear Captain Rhodes:

REFERRING to your article on "Cavalry Equipment" in the CAVALRY JOURNAL for April, I find in a footnote you misrepresent me, and I desire to set you right. If you will notice again my article in the JOURNAL for January, 1904, you will find that I do advocate the broken pack, so much so that after discovering the method described, I sent a description of the same to the Secretary of War, and it was by him referred to the cavalry board at Fort Riley some time in the fall of 1904. All troops which have tried it have never gone back to the method prescribed in Cavalry Drill Regulations. All of the Eleventh Cavalry, some of the Third, and Tenth and Ninth are using it, and I understand others have taken it up. All reports are unanimously in favor of its official adoption.

The absolute division of the pack into two equal weighted ends by the middle cantle coat strap, the lowering of the load, and the binding of the articles attached to the cantle rings; the reducing of the height to which the rider must raise his legs to clear pack (diameter at middle coat strap is two and one half to three inches); all of these make it so far ahead of the old pack that no one has thought of going back, having once tried my method. The nose-bag strap has to be lengthened about six inches, and then the strap binds the pack the same as in the old way. I had this done by my troop saddler in a day. This method is quicker than the old way, and the edges of the blanket do not get muddy, dirty or dusty when one is folding it.

My troop at a trot does not give the slightest motion to either lariat or canteen or tin cup. You cannot hear the

noise made by the equipment fifty feet away from the troop passing at a trot. I enclose a kodak, which will give you some idea of how it looks. Notice the pack on the horse, and how I carried the old style shelter tent poles. Notice the free open space under the cantle arch; also that the



THE VIDMER PACK.

height of pack is just as high as the cantle, and no higher. You will remember that the new style poles are hinged in the middle. I have none of these poles and so cannot give you a kodak of this pack with them, but you readily see, with the hinged pole, the solution of carrying is easy.

We believe that Captain Vidmer is entitled to the credit for the low pack. See JOURNAL, January, 1904. He did not name the above photo; and the label, The Vidmer Pack, is of our own volition and corresponds with the idea of the writer on the Fort Riley Maneuvers. See page 497, this issue.—[The JOURNAL.]

I have used this pack at all gaits, on long marches, and I speak from experience when I say that it is all right, and that the only disadvantage I have noticed about the complete cantle pack is the gleam of the tin cup. I am now working on this, and will be very glad to let you hear from me later on this subject.

We are all hoping that something like the Patterson carrier will be adopted, and that soon. The new rifle with its log-like scabbard absolutely prohibits the use of the left leg, and while I have been on no long marches as yet, I can not see how sore backs are to be prevented from its use, as now hung to the saddle. Another fact, the advance carbine or rifle is a relic of barbarism which ought to be done away with in short order. The pistol can shoot further and more accurately mounted, and the poor devil of a trooper on the skirmish line at a trot, with this new rifle, is a sight to melt the stoniest heart in the General Staff.

GEORGE VIDMER,

Captain Eleventh Cavalry.

* * *

My Dear Captain Rhodes:

Since reading your article in the CAVALRY JOURNAL about two months ago, I have been using the pack you suggest, and as all formations are with packed saddles, I have given it a pretty thorough test. Its advantages are as stated: The center of gravity is lowered, the weight is more evenly distributed, it is easier to mount, and it looks better. The principal, and, in fact, about the only disadvantage I find is that in close order the ends of the packs sometimes catch if there is any crowding in ranks. This, however, is a minor fault. I hope that it will be officially adopted.

I think that the worst fault in our equipment is the way in which the carbine is carried, and it will be worse when we get the new rifle. The method was of course originated by the cowboy, who carried the comparatively flat Winchester in that manner without trouble. With the carbine, and especially with the new rifle, carried in that manner, it is

almost, if not quite, impossible to make use of the leg as an aid. Besides, the weight comes on the pommel, which is bad. I believe that the English method is better than ours.

EDWIN B. WINANS,

Captain Fourth Cavalry.

* * *

FORT WALLA WALLA, WASH., April 23, 1906.

*Captain Charles D. Rhodes, Sixth U. S. Cavalry, General Staff,
Washington, D. C.:*

DEAR CAPTAIN RHODES:—I have read with much interest your article in the CAVALRY JOURNAL on "Cavalry Equipment." As you are on the General Staff, you are no doubt in a position to improve matters in the contemplated revision of the Cavalry Drill Regulations. I therefore make a few remarks for consideration.

Should the bolt knob be carried next the horse or away from it? My squadron has for two years carried the bolt outward, and to me it is very satisfactory. If so contemplated, the boot as now made must be used bottom up. In other words, a different pattern should be made if the bolt is outward.

Regarding the carrying of the rifle bolt to or away from the horse, the first position seems to enable the trooper to draw the rifle from the scabbard quicker while on the horse, while the second enables him to draw it quicker while on the ground. As the latter is the position from which it is drawn for action nine times out of ten, it should, in my opinion, be sufficient reason for carrying the bolt away from the horse. The use of the rifle mounted is of doubtful value. Quicker and better results would probably be obtained by use of the revolver. Assuming that the saddle-tree is rigid, which it is so far as the load is concerned, the counterpoise of the weight of the rifle, which comes mostly on the near pommel, is on the off cantle, which is really where the load you propose is attached.

We must always carry the surcingle around the horse, and it would not figure in distribution of weight.

In making up load you should add eighty cartridges for rifle and twenty-four cartridges for revolver, also canteen should be filled. (G. O. No. 23 and No. 44, W. D. 1906.)

I have tried a good many ways to harmonize the orders with the equipments, but cannot. The nearest I can come is to fill the first pouch on right side of rifle belt with loose pistol cartridges, slip the pistol holster over the pouch and hook the suspender outside of it.

The long rear pack which you advocate I have been experimenting with on actual service conditions, and it meets with general satisfaction. I am told the Eighth Cavalry used it for a long time. Your arrangement of the lariat would not permit of its use on the firing line by holding the horse on a half lariat. However, I should regard such use as very exceptional, while the distribution is a matter that effects the efficiency of a command every day and every minute of the day while on the march. This distribution would seem to me to be as follows:

NEAR SIDE WEIGHT.		OFF SIDE WEIGHT.	
Rifle	9.09	Lariat and pin	3.03
Scabbard	2.81	Canteen and strap	1.00
Meat can .....	.95	Tin cup .....	.56
K., F. & S. ....	.38	Currycomb .....	.65
		Brush .....	.63
		Saber and scabbard	3.75
		Saber knot .....	.20
		Two (2) horseshoes	1.50
		Nails .....	.25
		Shelter tent pole	1.00
Total	13.23	Total	12.57

This does not consider the canteen filled, which would sometimes throw the preponderance of weight to the off, and other times to the near side, depending upon the amount of water in the canteen. This also assumes that the watering bridle is not used, contemplating the adoption of the bridoon bit recommended by the cavalry board, which abolishes the watering bridle; neither does this arrangement consider the question of rations, two (2) field and one (1) emergency, required by General Orders No. 23. The adoption of the long pack necessitates the issue of all tent poles in three joints.

It is noted that General Orders No. 23 prescribes wire cutters for infantry, but not for cavalry. The reason is not plain.

To permit the use of the lanyard, which is very important, troops should be supplied with revolvers with swivels in the butt. Those on hand without swivels replaced by those with swivels.

I note the bars of the English saddle project at least two inches farther to the rear than ours. This is a very valuable and important point which our people have failed to recognize. I hope something may come of this important subject. It surely will if it is hammered long enough and hard enough. Sincerely yours,

ALONZO GRAY,
Captain Fourteenth Cavalry.

* * *

My Dear Captain Rhodes:

I am just finishing your article on the "Cavalry Pack" in the CAVALRY JOURNAL, and want to tell you that I for one agree with you. The low pack is certainly preferable, and besides the reasons you mention, I think the fact of its being more nearly a part of the saddle when packed this way is no small consideration. Your mentioning the difficulty of packing the shelter tent pole this way made me think of a letter that I addressed to the Military Secretary some time since which might interest you, in which I recommend that we do away with the tent pole altogether and use the rifle for a tent pole and a cartridge as a peg. One of the reasons I gave was the difficulty of making a well riding pack with the tent pole in the pack.

EDW. L. KING,
Captain Second Cavalry.

COMMENT ON MAJOR GALBRAITH'S COMMENT.

*The Editor, Journal of the United States Cavalry Association,
Fort Leavenworth, Kansas:*

It is observed on page 362 CAVALRY JOURNAL October, 1906, that it is recommended that the canteen be "fastened to the off pommel ring."

I wonder if the Major, author of the recommendation, has ever ridden at a trot or gallop with a canteen so attached? You will recollect that we had a short experience with that adjustment in the cavalry not very long ago, and of all fiendish punishments that, for a cavalryman, is the most cleverly devised. The constant beating of the canteen against the kneepan of the rider while at the faster gaits is certainly exquisitely cruel.

It is likewise suggested that the lariat be attached to the near pommel ring. How about the picket pin? I presume that that is to "bust" the left knee.

WILLIAM T. LITTEBRANT,
Captain Twelfth Cavalry.

THE VALUE OF PRELIMINARY DRILLS PRIOR
TO TARGET PRACTICE.

BY FIRST LIEUTENANT E. H. RUBOTTOM, NINTH CAVALRY.

TO those who have handled firearms since early childhood, and who can scarcely remember their first experiences in hunting, it seems incredible that any man can arrive at maturity without ever having fired a gun. Nevertheless such cases among recruits are not at all uncommon.

The average man that has been accustomed to using firearms finds that the aiming and sighting his piece becomes a second nature, and he probably never reasons why he uses a certain kind of sight. He knows that he hits the mark, if by practice he has become sufficiently expert.

However, in the instruction of men, very few of whom know anything about firearms, it is necessary to begin with first principles. The drill laid down by regulations are absolutely necessary to obtain any results with untrained men; and men who are well trained in the use of firearms find the prescribed exercises very useful in that they afford the eye, the arm and the trigger finger that practice and exercise which are necessary to make and maintain skilled marksmen.

The preliminary drills do two things: First, they teach the soldier how to aim his piece; second, they develop the muscles used in aiming and firing and in taking the different positions.

Gallery practice is also important, as it helps to keep the soldier's interest and affords an opportunity to apply the principles taught in the preliminary drills.

To illustrate the value of the preliminary drills, I will cite the case of Troop I, Ninth Cavalry, during two successive target seasons.

In 1904 the troop had no opportunity for preliminary drills, having been ordered to take the field before these could be held. Immediately upon its return to the garrison target practice was held, which, for lack of time, had to be completed as soon as possible. There was only time enough for the prescribed range work. The result was that only one of the best shots qualified as marksman, three of the old soldiers were first classmen, there were twelve second classmen, and the remainder were third classmen.

In 1905, after having spent considerable time in preliminary drills and gallery practice, the target work by practically the same men as in 1904 resulted in obtaining one expert rifleman, ten sharpshooters, nine marksmen, fifteen first classmen, fifteen second classmen, and thirteen third classmen. The third classmen were mainly recruits who had joined too late for the regular preliminary drills, and a few hopeless cases, such as are found in every troop.

This difference may have been due to a difference in the target ranges and conditions of weather; but inasmuch as the range used in 1904 is one on which division competitions are annually held, and is considered an excellent range, I

believe the poor showing made that year was due almost entirely to lack of instruction and practice in the preliminary drills.

We have about come to the conclusion that any troop or company commander that waits for the main part of the firing instruction to be given after the troop or company has marched onto the range, should be tried by a general court under the 15th Article of War. It is now generally conceded that men can be taught to be good shots without having fired a service charge. The main work of range practice is to overcome flinching.—[THE JOURNAL.]

FROM THE NATIONAL GUARD.

* * * * *

I WENT on a Southern trip with the First Infantry. You may have read that they participated in the dedication of the memorial to the memory of the Illinois soldiers who took part in the siege of Vicksburg. The first stop was at Jackson, then two days at Vicksburg, a short stay at Baton Rouge, a day or two in New Orleans, and finally at Memphis.

The notable thing which I learned on the trip was a practical method of feeding soldiers en route. Two sixty-foot baggage cars were employed, the forward one being divided into a commissary store house, carving and serving room and kitchen; the rear one being used as a mess car, and had a capacity for seating seventy-three men. The feeding of the entire command was accomplished in three shifts, and required about one and one-half hours. Naturally, the variety of food was limited, but it was all wholesome and well prepared. The price charged by the contractors was twenty-five cents a head.

It worked out very well, and, in my opinion, is the practical solution of the feeding of troops while en route. All the disagreeable features of feeding in cars are eliminated, and the men have the great advantage of having at least two hot meals a day.

I believe that in the case of the movement of large bodies of troops, the cost could be cut down considerably. For 700 men, where the equipment had to be especially installed, the price of twenty-five cents per man, in view of the food served, did not seem exorbitant.

WILLIAM J. FOREMAN,
Colonel First Illinois Cavalry.



GOLDENROD.

Age.—Four Years.

Color.—Golden sorrel (no white).

Grandsire.—Vanderbilt, a well known West Coast horse.

Dam.—By Vibart, Wallow Valley, Oregon.

Owner.—Veterinarian JOHN TEMPANY, Ninth Cavalry.

Rider.—Captain W. C. SHORT, Thirteenth Cavalry,
Master of Equitation, Fort Riley, Kansas.



Editor's Table.

HOW LONG, OH LORD, HOW LONG?

Our newspapers are becoming variously affected by the recent wage-increasing movement. The statement of the *Chicago Journal* that "the people are prosperous beyond anything in history" is quite acceptable, as it is true. One of the happy results of this prosperity is that millions more are to go in wages. It is believed that a contagion is to follow the action of the Pennsylvania Railroad, which has advanced the wages of its 165,000 employees to such an extent that about \$12,000,000 annually are to be added to the operating expenses of the road. We find in our dailies of almost every issue lately notices that other railroads are advancing wages at varying scales, usually a ten per cent. advance for the under \$200 per month employees, and a somewhat less per cent. advance for those above that figure.

It is also said, wonderful to relate, that the Standard Oil Company has decided to raise the wages of its 60,000 United States employees, and rumor credits the Amalgamated Copper Company and the United States Steel Corporation with similar intentions.

Surely this advance in wages falls like the dew of Hermon upon the wage earners, who must have viewed with utmost alarm the continually increasing cost of living. We need no dotted charts or tabulated statements of our periodicals to convince us of the growing cost of the necessities of life. As officers of our nation's army we are not so familiar with the changes of price in the luxuries of life, but we certainly are conversant with all matters pertaining to the necessities thereof.

And we find this increased cost of living striking us at a time when we are put to much greater expense than ever in the past by forced changes of station, that move us, on an average of twice in every six years, half way round the globe. And even the expense of transporting our families is here greatly increased by the bill which Congress wisely framed to suppress discrimination in rates. To this comes the added expense of running two establishments, one for ourselves in the Philippine Islands and the other for the wife and mother who remains in this country to properly educate the children. This latter is a necessity, for the educational facilities afforded the children of American parents in the Islands is best represented by the absolute zero of the chemist.

To go more deeply into the matter, the old type of the frontier post, with its small running expenses, has, with other types of our frontier life, disappeared into history of the past. The brigade or regimental post has replaced the old and brought with it its larger quarters and all attendant costs. It is expected of our profession that gentlemanly and genteel appearances shall always be presented by our officers. And our nation, would it pause to think, would not care to have the past record of its army and navy officials changed in this regard.

But to think that under present conditions army officers can hope to maintain the appearances, such as comparatively they could a few years ago, is beyond all reason. While our salaries remain the same, our expenses have increased at a rate that probably the most conservative would place at forty per cent., while it is not unfrequently heard from officers that it costs them now twice as much to live as it did fifteen or twenty years ago. As stated above, some of this is due to the conditions that are forced upon us by the new development as a world power, while the rest is what has been found by all salaried employees, increased price of living necessities. It is plain that unless these prices change, or the other corollary, an increase of salary, be adopted, the army officer is shortly to be placed where, in fact, many of them now are, in that most miserable, most soul-racking and happiness-destroying position of genteel poverty.

We find to-day many officers who are loath to accept stations in our large cities, and we have heard of capable officers declining positions on the General Staff because they feared the cost of living in our national capital, remembering the small amount of their monthly stipend.

The condition is serious and, as the action of the business world indicates a belief in the continuance of the national prosperity, there remains but one solution to the difficulty, namely, an increase in salary.

As to the enlisted man and his pay, the remarks of General Funston are axiomatic. One needs to ask but the same question as he does, "Where are our enlisted men to come from when the advantages of civil life are so disproportionately greater."

It is evident to the thinking man that the present trend of national events is in a direction that calls for an efficient army more than at any time in our history. But it is futile to suppose that the army can in the future secure the same class of men it has in the past under the changed conditions of increasing salaries and greater opportunities of civil life.

TIME REQUIRED TO MAKE A SOLDIER.

Colonel Pollock, of the British army, and his *Spectator Company* appear to have created a great deal of comment in the English press. As near as we can arrive at the Colonel's scheme, it was an attempt to prove, by working one hundred raw men, that soldiers can be made in much shorter time than is required in the regular establishment for that purpose. These hundred men, "keen as mustard," were given ten hours a day as their normal period of work. They commenced training on the same day, possessing the same amount of military knowledge, or as the *Broad Arrow* states, the same amount of lack of military knowledge, had no garrison duties to perform, and only a minimum of fatigue. Colonel Pollock thinks he has demonstrated by this means that the training of the soldier in drill and shooting requires

only months, where under the regular army way the same requires years. He thinks he has completed the training of a company in six months so that it will compare favorably with any regular company selected at random from the army.

Suppose he has. He has simply demonstrated something which every soldier admits to be possible, given a certain set of conditions to start with. But the conditions were not, and never can be, service conditions. The experiment was not only useless, it bordered on folly, for with conditions that can never be approximated in service it gave results that are entirely misleading to civilians. The average civilian knows little of the daily work of the army, and when he comes to learn something of the mass of routine he is very much surprised. With his lack of knowledge he looks at Colonel Pollock's experiment and sees no reason why the same cannot be done in the regular establishment. It places our profession in a false light, and makes the citizens of a country believe that soldiers can be manufactured in a few weeks amply able and competent to defend the homes or carry out any policy adopted by the government.

We know how our organization commanders and also how our post commanders strive to place the maximum number of men upon the drill lists for daily instruction, but we also know how this maximum amounts to but little more than fifty per cent. of the organizations even under specially fortunate conditions. Whatever may be desired in the way of having soldiers who shall have nothing to do but fight, we know they must work and take care of themselves. Army service corps are desirable, most assuredly, but to believe that they ever will be forthcoming for all the work of the army is to approach millenium conditions long before the financial resources of any nation will permit it.

Moreover, in the Colonel's experiment the trial was watched by the public with special interest. And men who are in a special trial will evince far more energy and zeal than those whose duty is a part of their usual daily routine.

It is true that at the outbreak of a war we shall receive recruits much more enthusiastic and full of zeal than are our

ordinary peace time recruits. During the Santiago campaign it was our misfortune to constitute a part of that force upon whom the general at the front must place the utmost faith and reliance. We refer to the force that remains at home, and is supposed to furnish the fighting line with competent men to replace casualties. Keen as was our disappointment, we set to work with zeal, hoping, as some officers of much higher rank did at the same time, that we would be in at the death at the siege of Havana.

We must say that the first few weeks of training was marvelous, and the progress of the new men, put into skeleton troops and into the reserves of the organizations in Cuba, was beyond our wildest hopes. It seemed that in three weeks the Tampa Horse Holders had a force that could compare favorably with the parts of the regiments that had gone on before.

But it shortly became evident that the war with Spain was over. There would be no siege of Havana nor any other work for the recruits at home. The only thing for these disgusted men to do was to sit down and wait for General Orders No. 40. Enthusiasm died away, the plague of flies brought on typhoid, and life at Tampa during the months of July and August was the most veritable hell that the American army has had since the terrible days of the Civil War.

Then our eyes became opened to what was seemingly a competent force, and how little comparison there was between it and the seasoned regulars that formed Shafter's army. It is simply a question of experience and discipline. And though Colonel Pollock's *Spectator Company* drill ever so well, their work in active campaigning will be of small percentage when compared with the men inured to discipline and pregnant with the traditions of military life.

All of which goes to show the absolute truth of the every contention of our esteemed contemporary and club companion, the *Infantry Journal*, that "it takes a very high degree of training on the part of officers to handle infantry in battle, and a very high degree of peace training to bring the foot soldier to such a standard of *esprit* and discipline as

will enable him to cross a fire-swept zone and win the battle under modern conditions, and that this training and discipline can be obtained only by long, systematic and earnest work on the part of officers and men."

No one can be more firmly convinced of the need of time to complete a perfect soldier than is the CAVALRY JOURNAL. And we were fully cognizant of the ideas in the mind of the *Infantry Journal*, in its contention as to the "popular fallacy that it took longer to make a cavalry soldier than an infantryman." We know that our esteemed contemporary had in mind all the details of the subject, and was considering the months that can and must be spent to develop the marching ability of the soldier, the training of muscles to such perfection that long marches of twenty and twenty five miles per day would become but an easy daily task, to be repeated from day to day as long as the stern necessities of active operations require. So we were not confusing "infantry of proper training and discipline with infantry that is so untrained and undisciplined as to permit to cavalry opportunity other than that found in scouting and *quasi* infantry duty." We had all those things in mind when we made our remarks about faulty eyesight that led to the conclusion that it takes no longer to make a soldier and mount him than it does to make a soldier and not mount him.

We are willing to accept the remarks of our contemporary, however, that we were mistaken in putting only one weapon on the infantry side of the line, and that the bayonet and intrenching tool should be placed there. This matter we must say we overlooked. While we have served at posts with infantry we must have been most unobserving in not noticing the hours spent in bayonet practice and ditch digging. And so we are glad to make this correction in our tabulated list, offsetting the bayonet against the saber (though it is said that the cavalry may be armed with the bayonet, whose value, however, is a theoretical matter of speculation). This still leaves the cavalry with the pistol and horse as against the intrenching tool. Now it may take a man as long to learn how to dig a hole in the ground as it does to shoot a pistol and ride a horse, but we must say

there will have to be an awful correction in glasses to make us see it that way.

Certainly in matters of discipline and men training there is no requirement in the infantry that is not duplicated in the cavalry, unless we grant the idea that the infantryman must be trained to make his long marches. But that this should offset the greater amount of labor involved in the mounted service as compared with the dismounted we are not ready to believe.

As for our contemporary's remarks about the cavalry in the Russo-Japanese War, we had been under the impression that that war conveyed little information about cavalry except how not to use it, and to more properly understand the absolute need of efficient cavalry. In our own Civil War we learn little about the proper use of cavalry until near the close, when its proper use began to be understood. And we dare say any war will always show a greater relative danger to the infantryman than to the cavalryman, though we doubt that in any future war, where cavalry is properly handled, we shall hear the old Rebellion slur, "Who ever saw a dead cavalryman?" But this does not mean that the same amount of courage, and discipline to maintain this courage, is not required of the cavalryman as of the infantryman, even though the latter must cross fire-swept zones that look annihilating. For scouting in small parties to the front requires a degree of courage even in excess of that where masses are being mowed down. As Macauley says, the physical courage to face danger is possessed by most men, and he means men acting in concert. But the patrolman, alone and in advance of his post or picket, has not the encouragement of comrades at his elbow, but must take his chances alone for his life, which is as dear to him as are the lives of his brothers in the other arms to them.

However, all this matter is beside the point. What we all desire is an efficient army. Heaven forbid that any remarks of the CAVALRY JOURNAL should be understood as tending to lower the standard by which infantry or any other branch should be measured. Only by hearty good will and coöperation can any measure of success be attained in

any army. No one is more ready than the CAVALRY JOURNAL to give the infantry its due, as the major and most important part of any army. It is the trunk to which all the other branches are but the limbs. And the harmonious action of a body in all its members is the only means by which success can be secured. We, for one, are most sorry to see even changes in our drill regulations that lead the separate branches of the service farther away from each other. We had hoped that one of the results of our General Staff would be an assimilation of duties and commands in infantry, cavalry and artillery, and we trust that this matter will soon receive the attention it deserves. It seems that the Signal Corps is becoming a really efficient system of nerves, both afferent and efferent, and "team work in war" can be secured with so much more ease when assimilated commands and orders are the ones to be understood and obeyed.

RESPECT FOR THE UNIFORM.

COMPANY K, EIGHTEENTH INFANTRY,
FORT LEAVENWORTH, KAN., October 27, 1906.

The Military Secretary, United States Army, Washington, D. C.
(Through Military Channels.)

SIR:—I have the honor to inform you for such action, if any, that the War Department may deem necessary, that on the 15th day of October, 1906, Sergeant Joseph A. Selby, and on the 16th of October, 1906, Sergeant Thomas A. Johnson and Corporal Lewis M. Willis, noncommissioned officers of my company, were refused admittance on account of their uniform to a skating rink, a public place of amusement, kept by E. C. Eads, at 423 Delaware Street, Leavenworth, Kansas.

These men were neatly dressed and sober. When they presented themselves at the ticket office and offered to buy tickets they were told that they would not be admitted in uniform, but would be admitted if they put on their civilian clothes.

In a talk with Mr. Eads after the occurrence he admitted to me the facts in the case, and gave as his reasons that the people of Leavenworth would not patronize his place if soldiers were admitted.

I would suggest that this letter be published in the Leavenworth papers.

Very respectfully,

M. MCFARLAND,
Captain, Eighteenth Infantry,
Commanding Company K.

* * *

[FIRST INDORSEMENT.]

FORT LEAVENWORTH, KAN., October 29, 1906.

Respectfully forwarded to the commandant of the service schools, requesting an expression of his views. It is very unfortunate and to be deplored that the uniform of the nation's army should be held in such lack of esteem by individuals in this community, and it is to be hoped that some means be found in correction.

WM. PAULDING,
Lieutenant-Colonel, Eighteenth Infantry,
Commanding.

* * *

[SECOND INDORSEMENT.]

U. S. INFANTRY AND CAVALRY SCHOOL, SIGNAL SCHOOL,
AND ARMY STAFF COLLEGE.

FORT LEAVENWORTH, KAN., Oct. 30, 1906.

Respectfully returned to the commanding officer, Fort Leavenworth, Kansas.

I do not know of any law that can compel the keeper of a theater, saloon, dance hall, or skating rink, to admit, against his wishes, any person, soldier or civilian, well behaved, who seeks admission, even if the place is public and the cost of entrance is tendered. The legal status of such places is different from that of a hotel, where entertainment

cannot be refused unless for lack of accommodation. The fact that soldiers, sober, well behaved, and properly dressed in uniform, have been refused entrance to a public place in the city of Leavenworth on the ground that if allowed to enter "the people would not patronize the place," should be brought to the public notice of these people, so they may be given an opportunity to refute such an assertion if it is not true. If it be true, then steps should be taken to divert the patronage of the post to other channels than those of this city, and application made to the War Department that no more troops be sent here. It is not believed that the people of Leavenworth will countenance the action of this Mr. Eads, for it is a fact beyond dispute that a very large part of the working people here, as well as many merchants, are dependent upon the patronage of the post for a living. A well behaved, sober, and properly dressed soldier, wearing his uniform, should be freely admitted to any public place, and welcomed as our citizens. My experience is that, as a rule, such soldiers are better behaved and more self-respecting than the same number of civilians from the corresponding class in life. I suggest that a copy of this paper in full be sent to the editor of the *Leavenworth Times*, with the request that he publish the same, and then, if the people of Leavenworth sustain the action of Mr. Eads, the original be forwarded to the War Department for proper action.

CHAS. B. HALL,
Colonel, Eighteenth Infantry,
Commandant.

The publication of Colonel Hall's views and his evident intention to take spirited action if the people of Leavenworth should countenance Mr. Eads' action, resulted in bringing before the Colonel a delegation of twelve prominent citizens of the City of Leavenworth, among whom were the mayor, the city attorney and the editor of the *Leavenworth Daily Times*.

The result of this visit can be gathered from the following:

LEAVENWORTH, KAN., November 9, 1906.

*Colonel Chas. B. Hall, Eighteenth U. S. Infantry, Commandant of
United States Infantry and Cavalry School, Ft. Leavenworth,
Kansas.*

DEAR SIR:—The committee of merchants of Leavenworth City, including the mayor and myself, that called on you on last Tuesday to talk over the matter of one Mr. Eads, who is the proprietor of a skating rink in Leavenworth City, in relation to his objecting to a soldier coming to his place of amusement in his regular U. S. A. uniform, met at my office on last Wednesday and requested me to write you in regard to some later incidents to this matter, that have been reported to them as having taken place. They have been informed that Mr. Eads in person has seen you or has communicated with you by letter, making an apology satisfactory to you in regard to him prohibiting soldiers in the U. S. A. uniform entering his place of amusement.

This committee desires to hear from you directly as to whether Mr. Eads has seen you or written you and made any apology in regard to this matter satisfactory to you or not. The committee are not satisfied in hearing this matter from Mr. Eads, or some of his friends, but desire to have you inform them if the matter is settled satisfactorily to you. Even if the matter has been satisfactorily adjusted with you the city authorities intend to and have started the preliminary proceedings to have Mr. Eads' place of business examined as to its safety, in case of fire, or to have people congregate in the place, or whether the building is safe for the purpose of a skating rink. This matter will be carried out in detail as to whether the matter has been satisfactorily adjusted with you or not. But if the same has not been satisfactorily adjusted the city will proceed immediately to have the license ordinance amended so that the license for running a skating rink in the city will be greatly increased. At your convenience you can write me as to whether this matter has been satisfactorily arranged with you by Mr. Eads or not.

Yours respectfully,

F. P. FITZWILLIAM.

City Attorney.

U. S. INFANTRY AND CAVALRY SCHOOL, SIGNAL SCHOOL,
AND ARMY STAFF COLLEGE.

FORT LEAVENWORTH, KAN., November 13, 1906.

Mr. F. P. Fitzwilliam, Attorney and Counselor at Law, Leavenworth, Kansas.

MY DEAR SIR:—In answer to your letter of the 9th inst., I take pleasure in informing you that Mr. Eads did call upon the commanding officer of the post of Fort Leavenworth and myself in the matter of his having refused admission to certain soldiers to his skating rink in the city of Leavenworth, and informed us that he had been laboring under a false impression, that he had been poorly advised, and admitted that he had made a serious mistake in the matter. He stated in our presence that he would withdraw any restrictions that had been made, and wrote us a letter, a copy of which is enclosed herewith, and which you can keep for file in your office.

We consider the incident closed, and will continue closed until new developments may arise.

Thanking you and the committee for your attention to this matter, which has resulted so satisfactorily to all of us, I remain,

Very sincerely yours,

CHAS. B. HALL,

*Colonel, Eighteenth Infantry,
Commandant.*

GLOBE BOWLING AND BILLIARD PARLOR,
423 DELAWARE STREET,
LEAVENWORTH, KAN., November 7, 1906.

The Commanding Officer, Fort Leavenworth, Kansas.

SIR:—I have the honor of extending my courtesy to the officers and enlisted men of your command, and would say that with due respect to all, that at any time my skating rink is open to the public, that the uniform of the United States army will be admitted at the same price as any one else

Respectfully yours,

(Signed)

E. C. EADS,

A true copy:

Proprietor.

W. H. GORDON,

Capt. and Adj., 18th Infantry.

BOOKS ON THE RUSSO-JAPANESE WAR.

We are pleased to direct the attention of our readers to the review of Chasseur's work in this issue of the JOURNAL, page 590, by Colonel James G. Harbord, Philippine Constabulary (captain Eleventh Cavalry). It is possible that we shall have to look to the French for the best works on this war. It would seem that the relations of France and Russia would offer the officers of the former nation opportunity for personal observation during the war that was not enjoyed by those of other nations. True there was an Anglo-Japanese alliance, without which Japan could never have hoped for success, unless, by some other means, she could have succeeded in rendering inoperative the two nations that prevented her reaping the fruits of victory over China in 1894. But we are under the belief, shared by attachés and newspaper men, that British officers with the Japanese armies shared little better than those of other nations as far as observation of movements and inside information are concerned.

General Hamilton tells very pointedly what amount of inside knowledge he gained, and his remarks upon that subject are recalled to our readers, who may remember our review in last issue upon the General's work, "A Staff Officer's Scrap Book." We dare say the French officers were in closer touch with the Russian ideas than were ever the British with the Japanese. And so we are not surprised that Frenchmen write more intelligently about this war at the present time.

* * *

We wish to call the attention of our readers to a small book by the talented French general, De Négrier. It is a small book of eighty-three pages, but we have seen nothing on this war more replete in every page with lessons for military men. Its very title is descriptive of what the book is, "Lessons of the Russo-Japanese War," and it does not belie its title one particle. On receipt of this little work we picked

it up from the table in a spare moment, and never dropped it till we had finished the eighty-three brilliant pages. Then we turned it over to the instructor of Military Art in the Staff College, and he used it for short readings to the staff class, many, if not all, of whom immediately ordered the work.

Many volumes will be ordered for the Staff College library, but the modest price, 2s. 6d., place it in reach of all. It is a book that should be read by every officer in the American service, and we particularly direct the attention of cavalry officers to the book. They will find much to ponder over, and the work should set them to thinking very deeply.

It is almost impossible to pick out any particular portions of the book that are better than others, but we shall make a few selections to show the General's method of handling the subject, and to give an idea of the remarkably clear and pointed style. There is no table of contents, nor is the book divided into chapters, but the pages run on one after the other in a beautiful sequence that captivates and holds till the end is reached.

We have first a few remarks on "General Bearings on Future Campaigns," followed by the subject of the "Russian Cavalry." Then several pages are devoted to the "Functions of Cavalry." This is discussed under three heads, namely: "Reconnaissance," "Cutting Enemy's Communications," and "Cavalry in Action." These remarks on "Cavalry" are followed by a couple of pages on "The Japanese Plan of Campaign." We quote from pages 35 and 36 to show how the lessons of the war are brought out by this remarkable work:

"The Russian cavalry, unable to pierce the screen, found it impossible to obtain any reliable information. So completely were they baffled in this respect that General Kuropatkin believed that on this side he had only to deal with an unimportant demonstration. Even on March 6th he still sent reassuring dispatches to St. Petersburg, for along the whole of his front, from the south of Mukden to as far east as Tita, a distance of fifty miles, the Japanese had everywhere been repulsed with considerable loss. On the evening of the 6th,

however, the real danger became apparent. The army of General Kaulbars had been forced to change its front, while still actually engaged, thus giving proof of its remarkable cohesion. The Japanese were only able to make headway against it to the extent of little over three miles. By the evening of the 9th, however, the battle was definitely lost.

"Why did not the Russian cavalry take action as a whole, and use their firearms, like Sheridan's Horse at Five Forks? All might then have been saved. It would have hampered General Nogi's movement, and given General Kaulbars time to re-form his troops in échelon facing south. The Japanese attack, forced to extend instead of contracting, would have become exhausted, and a Russian victory might then have become probable. But another point of view has to be considered. An army on the defensive is obliged to retain a number of reserves. At the commencement of a battle, in fact, it is difficult for it to foresee the particular point upon which the enemy's principal efforts will be brought to bear. The great resisting power of the fighting front tends to cause the reserves to be placed at the wings, and it becomes all the more necessary that they should be so composed as to be able to intervene in time. In consequence of the enormous extension of the fighting front, infantry, which are unable to get over the ground faster than two or two and one-half miles an hour, cannot any longer properly fulfill the duties of a general army reserve, much less those of the reserve of a group of armies. Henceforward these duties belong of necessity to the mounted arm. Two or three divisions of from 6,000 to 8,000 cavalry, good marksmen, provided with pom-poms, guns, and howitzers, will allow the general-in-chief commanding either to repulse an attack or to bring about a decisive result at the right moment."

On page 38 we find the following, under the heading of "What Might Have Been:"

"Admitting that events were what they were, Mukden would have been nothing more than a battle lost without disaster. The retreat ordered on March 8th was carried out, we know, in perfect order by Linievitch's army to the east,

as well as by Bilderling's left. On the 9th, however, a gap having been allowed to open between Bilderling's right and the left of Kaulbars, a Japanese detachment provided with artillery dashed through it towards the north and opened fire upon the rear of Kaulbars' troops while they were facing west. This it was that caused the disaster. It was here that the greater part of the 40,000 prisoners were taken. The 3,000 or 4,000 cavalry in reserve at Mukden, rapidly sent to block the gap or to sweep out the Japanese detachment, the strength of which was comparatively insignificant, might have saved the situation."

Now follows a discussion of "The Japanese Cavalry," and then "Artillery." From the first few lines on the subject of "Artillery" we quote as follows:

"The advances made during the last few years in the construction of artillery have created an impression that the part it will play in the battles of the future must be absolutely decisive. It will be nothing of the kind. Its part will be important, but not conclusive."

The reasoning convinces, in the following pages, that the General knows what he is talking about. Any officer that has not carefully weighed the importance of the artillery, and the great amount of transportation required for ammunition, is far from being up to date or even fairly well read.

Next the General pays his compliments to "The 'Positionist' Heresy," and does it in good trenchant style. We next have a page dealing with the lessons of "Trenches and Covers." He states in this regard that no lessons are to be learned from the Russian tactics. With regard to the Japanese it is quite another matter. And some pages are then given up to the subject. On page 64 he starts a lesson from Liao-Yang, and quotes from a former French officer who had just seen more than a year's service as a volunteer in a Boer commando, and afterwards became an amateur war correspondent in the army of General Oku, following the firing line of one of the most sanguinary episodes in the battle of

Liao-Yang. He gives some three or four pages of this correspondent's writing.

The author is now nearing the end of his lessons. Under the subject of "General Tactics" we find some of the lessons as follows, clipped here and there from the reading matter: "To march and attack by night, to shelter in earthworks by day; such are the essential characteristics of the tactics actually forced upon us by the efficiency of modern firearms. In the offensive the intrenching tool is now indispensable to every infantry soldier. He should be practiced in digging while lying down, so as to lower himself gradually into the ground until he is sufficiently sheltered. * * * The general form of attack has never varied. * * * The Russo-Japanese War has demonstrated once again that by offensive tactics alone can victory be assured." Under the head of "Changes Essential," he discusses cavalry, artillery and infantry. We wish every cavalry officer in our service would read the few pages devoted to essential changes in cavalry. It is sufficient to say the General believes the shock action of cavalry obsolete, and that dismounted fire action is largely its rôle. He believes in mounted infantry, but his remarks, that scouting must hereafter be done by experts, shows him wide awake to the necessity of a most carefully trained body of cavalry of large numbers. He wants all cavalry armed with machine guns, preferably of the Danish pattern, and we call attention as regards this matter to the article furnished the JOURNAL upon that subject by Colonel Macomb, in this issue, pages 443-452.

"As regards the tactical part cavalry is called upon to play, it must now be regarded as the arm which allows an officer commanding in chief to move, with the maximum of rapidity, the rifles, guns and machine-guns to any point where he wishes to produce a special effect, or to guard against any threatened danger. Thanks to the swiftness of their movement from place to place, bodies of cavalry must play a dominant part in the battles of the future. They will form the reserves which a general will have at his disposal, and with which he will be enabled to carry out his

tactical surprises. With the enormous fighting front of modern battles, no other arm can arrive in time to produce effects of this kind. By its fire suddenly opening upon an unexpected point it will change retreat into rout. Then, mounting once more to pursue, it will utilize the horse as its weapon no less than the traditional cold steel, to reap more trophies than it ever garnered in days of yore."

In his general conclusions, he states:

"In formulating the conclusions my object has been simply to call attention to the essential characteristics of the late war. Many other lessons might be drawn from it, such as the particular disposition of the troops necessary for reinforcing the fighting line in battles of several days' duration, the distribution, actual position and intervals of reserves, both in the offensive and defensive. All these, however, may be inferred from the facts already discussed.

"It is for the high military authorities to analyze the details. On the whole, however, it is evident that the Russian soldier still retains those qualities of steady pluck and staunch endurance which excited the admiration of Napoleon; and, on the other side, that the extraordinary energy—physical, moral and intellectual—of the Japanese has justly challenged the amazement of the world. It was, indeed, an impressive object-lesson in the overwhelming influence exercised by moral forces—unconquerable self-reliance, devoted patriotism, and chivalrous disregard of death. It is now universally recognized that the individual courage of the soldier has never shown itself more predominantly than in his use of the deadly weapons which modern science has placed in his hands."

This is a book we hope our officers will buy, and its price will allow anyone to be the owner. It is published by Hugh Rees, Ltd., 124 Pall Mall, London, S. W. It will also be obtainable from the Secretary of the Staff College, Fort Leavenworth.

The JOURNAL's list of books and magazine articles upon the war now stands as follows:

On the causes:

The Russo-Japanese Conflict. (Asakawa.)

On the War:

From the Yalu to Port Arthur. (Wood.)

The War in the Far East. (The Military Correspondent of the *Times*.)

A Staff Officer's Scrap Book. (Hamilton.)

Lessons of the Russo-Japanese War. (De Négrier.)

Articles in the *Outlook*. (Kennan.)

For Comparison:

The Chinese-Japanese War. (Vladimir.)

All of the above have been carefully reviewed in the JOURNAL.

The *Outlook* has not as yet published Kennan's articles in book form.

Asakawa's book can be purchased from Houghton, Mifflin & Co., for \$2.00; Wood's and Vladimir's from the Hudson Press, Kansas City, Mo., for \$1.50 each; The War in the Far East, from E. P. Dutton & Co., New York, for \$5.00; Hamilton's, from Longman, Green & Co., New York, for \$4.50; De Négrier's, from Hugh Rees, 124 Pall Mall, London, S. W., for 62½c.



**A Study of the
Russo-Japanese
War.**

"A Study of the Russo-Japanese War,"
by Chasseur. Among the volumes deal-
ing with the Russo-Japanese War, there
is no summary of this struggle that the

writer has seen which so well presents its broad issues as this one. Its author writes in terse, soldierly style, with the authority of one "having an intimate knowledge of the theater of operations and of the armies of both belligerents." Besides personal knowledge of theater and combatants, he has made use of "all available information," his list omitting none of the familiar books except General Ian Hamilton's "Staff Officer's Scrap Book," to which some think Chasseur stands in the same relation that he does to the subject of this review. Perhaps time has not afforded the proper perspective to historians of this war, but the work of Chasseur carries conviction of the correctness of his information and the accuracy of his conclusions.

Undoubtedly much of the Russian, Japanese and Chinese intrigue which preceded the war is not apparent to us in the West. The familiar statement, that Japan's policy is defensive, Chasseur admits as a truism on its face, because preparedness for war is the strongest and most pacific defense that any nation can have. Both Japan and Russia were really struggling for an expansion economically necessary to

both. Granting Japan's purely defensive instinct, he does not doubt that during many years she prepared against the eventuality of this war with Russia. Her recent insignificance was one cause of her success. Russia, in the terror born of her unfathomed strength, had carried colossal weight in western politics for twenty years, and her most astute statesmen did not believe that Japan would invite "effacement by breaking a lance against the solidity of the Russian Empire." Ready herself, Japan had the fullest information of Russia's unpreparedness. As an instance of the information, when Russia was denying the existence of fortifications at Liaoyang, Port Arthur and Yongampo, the war minister of Japan had reports on his table from his officers, who as laborers were helping to build the works. Russia's unpreparedness lay not only in paucity of troops and munitions, but in lack of system and in the venality of her officers. Public funds lined private pockets instead of providing machinery for war.

The soundness of making Korea the first objective is apparent, it "being as essential to Japan's naval strategy as for her military campaign." Togo required it for his offensive, and it was absolutely necessary that the Russians should not secure a harbor for use against Japan. The first transports landed troops at Chemulpo, in the presence of a weak Russian squadron, whose chief did not have the grit to resist it. Later, under challenge from Urieu, it steamed out to accept battle, amid the applause of other naval forces. This proceeding was gallant in its conception, but dismal in its ending, for the courage of its chief forsook him, and he fled for his anchorage, opened the seacocks of his vessel and blew up her companions.

The attack of Togo's destroyers on the Port Arthur fleet is described, and the morality of the Japanese stroke is not questioned. The failure of the destroyers to return again and again and maintain the panic, instead of waiting until later in the night, is criticised. A dominating factor in the strategy of the war is found in the belief that after this engagement, the Japanese rated the commercial value of the

Russian fleet higher than its fighting value, and shaped their plans to ultimately possess it.

On the sinking of troopships by the Russian Vladivostok squadron, it is remarked that "the loss of troopships will always be distressing when the transportation of troops is undertaken before a nation has complete command of the sea," *something that our country will do well to remember.*

The Japanese were "prepared for all contingencies except unchecked success;" and the Russian naval breakdown found their third and fourth armies and the siege material for Port Arthur unprepared, and delay ensued, which Chasseur thinks militated against their complete success on land. In April Kuroki's army had established itself on the south bank of the Yalu. The second army was "destined to effect a complete isolation of Port Arthur, and consequently was intimately connected with Togo's naval strategy." In May it beat the garrison back from Nanshan, giving the Japanese an essential port for the maintenance of armies marching north, and for organization of the operations against Port Arthur. The June sortie of Admiral Witgeft is detailed, but as Chasseur remarks, "The story is short and dispiriting, and bold as Admiral Witgeft's intentions may have been he made the 'fatal half turn' which discloses moral inferiority." In August the dismal ending to the Russian battle squadron came, "two-thirds of its strength lying down to die in Port Arthur, the other third ignominiously fleeing to the shelter of a neutral port and accepting emasculation as the price of protection." He forgets our modest claims for Dewey and Schley by characterizing this as the "first fleet action of modern war ships in the world's history," and finds "something uncanny in the thought that the blood red battle flag, the emblem of a rising eastern sun should have triumphed over the blue St. Andrews cross."

"Three main objectives stand out in the Japanese campaign. The first and essential, is the command of the sea; the second, the occupation of Mukden; and the third, the isolation and incidentally the reduction of Port Arthur." They hoped to do this before the winter of 1904-05 and "the impression also remains that once this end had been accom-

plished, the Japanese would have been willing that diplomacy should end the struggle." Until Kuropatkin arrived the Russians had no plan beyond a "feeble endeavor to reinforce the threatened area of invasion and a fevered haste to pour a garrison into Port Arthur."

At the landing of Kuroki's army in Korea the Japanese brought landing piers of bamboo, the better to negotiate the mud-flats; they brought a flotilla of tugs and lighters from Japan, and in one week they had converted the wretched little Korean town which fringes the mud-flats, into a veritable military emporium, complete in every department, with godowns, repository works, and even a light railway. The battle on the Yalu had a wide significance. "On sea the results had been disastrous to the Occidental. Would the working of Oriental evolution be crowned with similar results on land? * * * The Russian had never had a character as a sailor, but the West could remember a hundred incidents in evidence of his peculiar attributes as a soldier." Chasseur presumes from the dispositions that it was never intended by Sassulitch to do more than make as brave a show as possible and withdraw with a force numerically inferior in men and artillery. This happened, and "as a feat of arms there was nothing extraordinary about it." On the Japanese side, "Kuroki put into force a far more elaborate design than the strength and condition of his enemy warranted, and as a consequence was unable to pursue." After the Yalu "the plan of the major land operations began to unroll."

General Kuropatkin on his arrival in Manchuria gave utterance to sentiments which showed that he was "cognizant of the existing state of criminal inefficiency," and was prepared if necessary to abandon Liaoyang and even Mukden to his enemy until he had constructed a field army. Chasseur still believes that "Kuropatkin has proved himself a soldier of first rank. He was required to construct his army in the face of a superior, aggressive and victorious foe." Conceding that he should have withdrawn the garrison from Port Arthur, and abandoning Liaotung Peninsula, have organized his field army in Manchuria, it is remarked that "It is given to comparatively few commanders in the

field to hold both the military and political reins of a campaign." No American can look forward to such conditions. His plan had to include the Kwantung Promontory. This had the advantage of attracting the Japanese to the magnet of Port Arthur, while he gained time to make a staff and the railroad brought an army. There was more foresight in this jeered-at strategy than has found credit, and the reader may "form his own opinion of the opposing strategy which dallied with extremities while the heart was anæmic, and ultimately struck at the vitals when those organs were more robust." The battle of Nanshan, "magnificent example as it proved of the fighting qualities of the Japanese soldier, saved the Russian arms from that total annihilation in the field which would in our opinion have terminated the war with the subsequent destruction of the Pacific squadron and fall of Port Arthur."

The fetich of the Japanese general is to strike his enemy as soon as he finds him, and in the genius of finding him in the least favorable condition his limitations become evident. Oku's proceedings at Tehlitz, when he turned north with all but one division, are described as "butting in" with his frontal attack. A counter-stroke was arrested by Japanese cavalry, which, however, was fifteen miles from its assigned place, due to "difficult country." "Oku's success was purchased at the price of a military exhaustion, which permitted him to cover but fifty miles during the ensuing month."

In June the Japanese were converging on Liaoyang by three main roads from the southern seaboard, while a fourth force was to drive in the outposts of Port Arthur. An interesting account is given of the part played by climate and transportation. The contest over Motienling is described, and the engagements at Kaiping, Tashichaou, Haicheng, and An-shan-chan, which gave Japan a summer sea base at Yinkow. In July Count Keller was killed, and while believing that his death was a great loss to Russia, the author thinks "it would have been better for Kuropatkin and Russia's cause if casualty had more thinned out the officers in high command during the earlier phases of the struggle."

At Liaoyang "Oyama and his staff learned the lessons of modern war, which six months later were to give them the overwhelming victory at Mukden." The struggle for Liaoyang is well described. Kuropatkin saved his army practically complete, except for 16,000 casualties; Oyama had paid 30,000 dead for his possession of the Russian positions, and failed to bring about a result which would have saved his country from a second year of war.

An exceedingly interesting chapter is devoted to the conditions which centered round Port Arthur in 1904; to the gallant investment and equally gallant defense. The faculty for military fortification for which the Russians have had credit since Todleben's day was put to its best use at Port Arthur. The natural strength of the environment of the port was remarkable. And over forty thousand troops held the defenses. Beside the mere reduction of a hostile citadel, the last Russian ice-free port in the East, the Japanese army had to capture or destroy the Pacific squadron as it lay under the shelter of the Port Arthur batteries, and free Togo to deal with the reinforcement sailing from the Baltic. "The Siberian Railway had proved of a military value far in excess of the assessment made for it, both in European and Japanese estimates," and the need at the front of the four divisions in the Kwantung Promontory made it imperative that the stronghold be reduced. It was those considerations that allowed Nogi to sacrifice his infantry by battalions to achieve that result. Apparently the Russian garrison lacked most in the matter of leadership, and was not reduced to exhaustion at any period. "We find in the ill-fated Kondrachenko the heart and soul of the splendid defense which the Port Arthur garrison made against perhaps the most scientific, persistent and vicious siege that in the history of war has ever been pressed against a beleaguered garrison," but "once he was gone, the whole fabric seemed to wither, and within a very few days the permanent *enciente* was pierced." One can hardly imagine the terrible scenes of carnage when Nogi, in August, made his desperate effort, "trusting to the magnificent *elan* of his men rather than to the prescribed occidental methods of approach to a first class fortress, hitherto unpre-

pared and unassailed." * * * Every devilish device that modern science could contribute to the defense was employed by the subtle Russian sappers. Wire entanglements were electrified for miles, dealing death upon touch to the eager pioneers, who sought to clear a way for the desperate infantry behind them." Light steel shields, non conductive gloves, hand grenades, bamboo mortars, spar torpedoes, and every ingenious device was used, but Port Arthur, unprepared by artillery and unapproached by sap, was not to be carried by escalade. "The spade, the mattock and the large calibre howitzer are the prime implements in the reduction of a first class fortress, notwithstanding the fact that the besieging general commands incomparable infantry." And by such means Port Arthur fell, after a fine resistance, which lasted 155 days.

Two exceedingly interesting chapters describe the journey of Rojdestvensky's armada and its arrival and overthrow. The Dogger Bank incident and Captain Klado's extraordinary essays on the Russian navy are discussed at length. As will be remembered Klado was dismissed for his strictures on the imperial navy. Chasseur believes his was a deliberate sacrifice to create a campaign of agitation, rivet attention on the last desperate chance of Russia's navy, and stir up the government. This seems probable, as Captain Klado has, in October, 1906, been restored to the navy. The admiral is credited with having conducted his fleet the long 15,000 miles with skill, systematically exercising the vessels in gunnery and steam tactics, and reducing the fouling by a specially designed contrivance." The sanguinary encounter in Tsushima Straits, which practically annihilated the armada, is reckoned by the author as the deciding issue of the great struggle. "Few people even now appreciate what this final triumph of Oriental over Occidental means to the peoples of the East." Chasseur's description of the great battle is most interesting, but, as he says, "the story is too awful for cold blooded speculation." There are few more pathetic scenes in history than the surrender next day of Admiral Nebogattoff and the residue of his squadron, off Liancourt Rocks. The captain of the *Admiral Oushakoff*, who sunk his ship and

took his chances in deep water rather than surrender, played a better part. One little vessel, the *Almaz*, found her way to Vladivostok, where she was hailed with wild enthusiasm as the advance messenger of a victorious Russian fleet. The residue of the Baltic fleet struggled into Manila Bay a week after the battle. Of the whole strength of the Baltic fleet, one cruiser and one destroyer remained in Russian waters.

Seventeen interesting pages describe the battle on the Sha-Ho, "which in point of numbers engaged, the area over which the operations took place, and the issues involved, is probably with the exception of the subsequent battle of Mukden, the most famous of all time." In actual casualties it cost the Russians 47,000 officers and men. The approximate loss of the Japanese is figured at 36,000 officers and men. They had beaten their enemy a second time, but it required another six months to oppose him with enough men to crush him. Both armies went into winter quarters on opposite sides of the Sha-Ho, and local armistices were established for camp economies. These peaceful months on the Russian side were occupied in bickering, petty jealousies and open mutiny among the chiefs. Gripenberg tore up Kuropatkin's messages and flung the pieces in the messenger's face, and Kaulbars slapped the face of the chief of staff. On the Japanese side "their unity of purpose and fixed idea was sufficient to eradicate even the jealousy of the sister services." Mischenko's cavalry raid around the Japanese left "reads more like the American Civil War than anything we have hitherto had in the history of the campaign," but did not fulfill its promise, and all the flying columns were chased back to the Liao-Ho. During the winter each army connected its wings with light railroads, telephones, and all scientific means of inter-communication. The Japanese prepared a second and third line of defense within an easy distance of their front; the Russian second line was forty miles behind Mukden.

The battle of the Heikautai in January is still an enigma. Gripenberg's army made an attempt against the Japanese left, and ignorant of the second line, "simply 'budded in' between two held parallels, and had neither the information

nor the direction to grapple with a situation, the success or failure of which depended upon the active coöperation of Kuropatkin's center and left, or a magnificent effort of the Cossack divisions on Gripenberg's right." No coöperation came, and in six days a broken and defeated rabble was hurled back. The Russian loss is estimated at 20,000; the Japanese at 7,000. The mutinous and sore-headed Gripenberg flung his resignation at Kuropatkin and started for Russia. "Heikautai probably furnishes the most curious and disastrous example of disagreement between officers in high command in the field that is to be found in all history," and Kuropatkin "accepted defeat for his whole force on the fortunes of an infinitesimal portion of it." Meanwhile no such apathy existed on the Japanese side. Nogi's Port Arthur army had come up, and another army consisting of veterans brought to the colors through the new extensions of service requisition.

Although the Russians settled back quietly into their dugouts, Kuropatkin himself seems to have been preparing to take the initiative, or at least to meet the Japanese attack. Among the indications of a coming advance was the affair of Hsin-kai bridge in February, where, 160 miles north of Mukden, the railroad was cut by Japanese cavalry, the first time they had attempted any such enterprise. "This raid, which reminds us of the Southern cavalry enterprises during the American Civil War, was a really magnificent piece of work."

The battle of Mukden, perhaps the most comprehensive military movement of modern days, consisting of a series of different battles, each approximating Waterloo in magnitude, is dealt with by outlining the positions of the chief units in the opposing armies, and then following the victors in detail from right to left. The occupation of Hsin-min-ting by Nogi on the Russian right confirmed all doubts as to the efficiency of Mischenko's cavalry Cossacks, "for if in the whole theater of operations there ever was a terrain that was suited to the movements of an independent cavalry division, it was in this particular section." The Russian force is

placed at 361,500 and the Japanese at twenty-five per cent. over that.

Chasseur's description of the Homeric fighting in which these tremendous forces engaged is most interesting and inspiring. He believes that Kuropatkin failed, not for lack of military intelligence or other attributes of a great general, "but because he attempted the impossible in endeavoring to maintain in his own hands the command of the vast army concentrated in Manchuria;" and "to this account must be laid the lack of coöperation and cohesion, which undoubtedly was the main cause of Russia's military collapse." The comments on Kuropatkin's conduct when beaten, and the closing scenes of the battle are very convincing. The conclusion is reached that Mukden, while a heavy defeat and crowning disaster to a disastrous campaign, was almost as disastrous in its military paralysis to the victors as to the vanquished, and Japanese magnanimity in the surprising peace of Portsmouth is traced to the effect of Mukden on her military resources.

While Chasseur finds in the Japanese the finest type of regimental officer in modern history, he agrees with Douglas Story that the Russian officer's "faults and virtues are those of a strong race, of a man whose blood runs warm in his veins." Of the rank and file, their opposite qualities bring them to a similar level. "The Japanese is a fine fighting man on account of his inherent discipline and patriotism, the Russian on account of his lack of intelligence." Both armies have dependence on their immediate superiors, and he concludes that in the raw material Japan had other advantages besides numbers. Perhaps the most extraordinary military trait of the Japanese is their "peculiar nerve-recuperative power under failure," steadfastly "believing that the sacrifices they make are providing some benefit in another part of the field. This is the true martial spirit."

The book is well printed, but has some errors indicating carelessness in proofreading. On page 125, "June" is given for July; page 141, "northwest" is used for southeast; on page 166, "east" should be west; on page 316, Kuropatkin's "left" is given for his right in the sixteenth line. The

maps are good enough for their purpose. The book has 332 pages. Generally the book is so satisfactory that if restricted to two dollars and one book on this war, this is the one we should buy. It is published by William Blackwood & Sons, Edinburg and London. It was on sale in Manila in May last, but the supply was soon exhausted, and we have not been able to find it on sale in the United States in New York or Washington. Its purchase by officers is recommended.

HARBORD.

**Private's Handbook
of Military
Courtesy and
Guard Duty.***

Captain Rowell's book has left little to be desired. Now that guard duty is largely being done by companies, there should be a large call for this handy book, for companies will emulously strive for the distinction of the best informed organization in the post. Several of these books distributed throughout the company will assist the company officers more than anything else. The simple language, the neat and attractive appearance, and the clearness of the cuts, all go to make a valuable compilation.

The contents of the book are as follows:

Military Courtesy:

- Saluting.
- Salute with the Hand.
- Rifle Salute.
- General Rules for Saluting.
- Honors.

Manual of Guard duty:

- In General.
- Privates of the Guard.
- Orders for All Sentinels on Post.
- Orders for All Sentinels except No. 1.
- Orders for Sentinel No. 1.
- Night Orders.
- Compliments from All Sentinels.

*By Captain Melvin W. Rowell, Eleventh Cavalry. From the press of the Hudson Publishing Company, Kansas City, Mo.

Special Orders for Sentinels in Charge of Prisoners.
Orderly for the Commanding Officer.
Musicians of the Guard.

We quote from the preface as follows:

"The private of the National Guard, or of the Volunteers, often meeting with doubts and difficulties in referring to unabridged manuals for details, a handbook for his individual guidance is of considerable assistance, if not a necessity, to company commanders in the routine instruction, or quick training, of their commands in fundamental duties.

"An effort has been made to place before the soldier, in a convenient, compact and economical form, essential features which he must learn, not only in order to perform well his present duties, but that, should he later rise to the position of a noncommissioned officer or officer, his comprehension of his new duties as a subordinate and as an instructor will rest on a solid foundation. With this object in view, certain paragraphs of authorized manuals and regulations of the United States army are presented, with supplementary paragraphs (printed in small type) where thought necessary to aid the inexperienced.

"On my own responsibility, the changes in the manual of arms, saluting, etc., due to the recent modifications (and their adaption to the Krag-Jorgensen and Springfield arms) have been embodied in the paragraphs from the authorized manuals."

This is a book that a private will like to read. The orders are so neatly arranged that it will be a pleasure for the private to learn them, which is saying a great deal. Troublesome little points of detail are settled, and we will find men doing guard duty in one certain way, and not according to the individual ideas of company commanders. It would not be a bad idea to have a school of short duration in this manual for privates.

The only regrettable feature about the work is that this second edition was not made somewhat smaller, (though it can now be carried in the blouse pocket), and bound in leatherette of durable quality, as the English manuals are. We

have been harping so long on this method of getting out our small military works that we are beginning to be disappointed that some of our publishers have not yet seen fit to consider the matter. Our drill regulations might serve them as a guide, and we dare say profitably.

**The Final
Conflict.***

Mr. E. S. Ricker, of Chadron, Nebraska, who has headquarters at Grand Junction, Colorado, has been engaged for some time

in the collection and preparation of materials for an Indian history of the United States from about the period of the Mexican War to the present time. The title will be "The Final Conflict Between the Red Men and the Palefaces." The purview embraces an amount of discursive history not suggested by the title. Judge Ricker's original idea was to write a monograph on the tragedy of Wounded Knee, being inspired by his acquaintance with the field, the facts and many of the participants, and a residence of more than twenty-one years in the neighborhood. His contemplations at length extended his perspective, when he decided that his plan ought to take in the operations on the Little Big Horn in 1876, when General Custer and his brave band perished under such painful and heroic circumstances. These events, he determined, have a certain balancing character in history; and the next logical step was to go back just prior to the time when the rush to the Pacific Ocean began, in which movement originated immediately the crowning griefs of the aborigines.

Travel, transportation, settlement and hunting brought the red and the white man into deadly and almost perpetual conflict. It is his aim to tell in detail the story of the picturesque and desperate struggle, the collapse of the Indians, and the unique undertaking of the government to assimilate them as part of the blood and bone of our civilized population.

*"THE FINAL CONFLICT BETWEEN THE RED MEN AND THE PALEFACES." By E. S. Ricker, ex-county judge and late editor of the Chadron Times.

In his prospectus, which he sends out to those from whom he solicits information, he says:

"After three hundred years of conflict the threatenings and realities of border warfare have ceased to surprise and alarm the country; the white invaders and foemen have conquered resistance and planted peace by the iron power of integrity, rapacity, perfidy and numbers; the Indian race in its native vigor and glory is crushed out; the last chapter of its untamed history has been made and may now be written; and whatever there may yet be new in aboriginal story will be but the mournful record of how the embers of a fiery race died out upon the hearthstones given them by the Great Spirit they worship, in the ultimate absorption that is to be.

"To aid in a better understanding of the 'Final Conflict,' I shall advert to the period when the Missouri River was the great artery of traffic and communication, and introduce the reader to the work of the good missionaries whose names must resound forevermore in praise and reverence, and take him upon a lively excursion among the absorbing events of primeval life in this deep wilderness of the unknown West—events so thrilling that they seem to verge more on fancy than to be plain recitals of actuality.

"Exploits of trappers, adventures of fur traders, and hardships of explorers, in this wonderful region coursed by this mighty waterway, will receive such treatment as the limits of the work will permit. The routes of overland travel and express are historic highways strewn with the bones of daring men following the course of empire to the golden shore; these furnish themes for fascinating narrative which cannot be passed without ample notice.

"Bold and hardy characters for generations threaded these plains and crossed the mountain ranges, and by tireless and dangerous service, and by examples of personal courage and rugged endurance, have made a story as charming as ardent imagination can picture. My aim will be to furnish authentic details concerning many of these daring spirits. Habits, customs, rites, imagery and oratory of the Indians, together with an account of the present reservation system

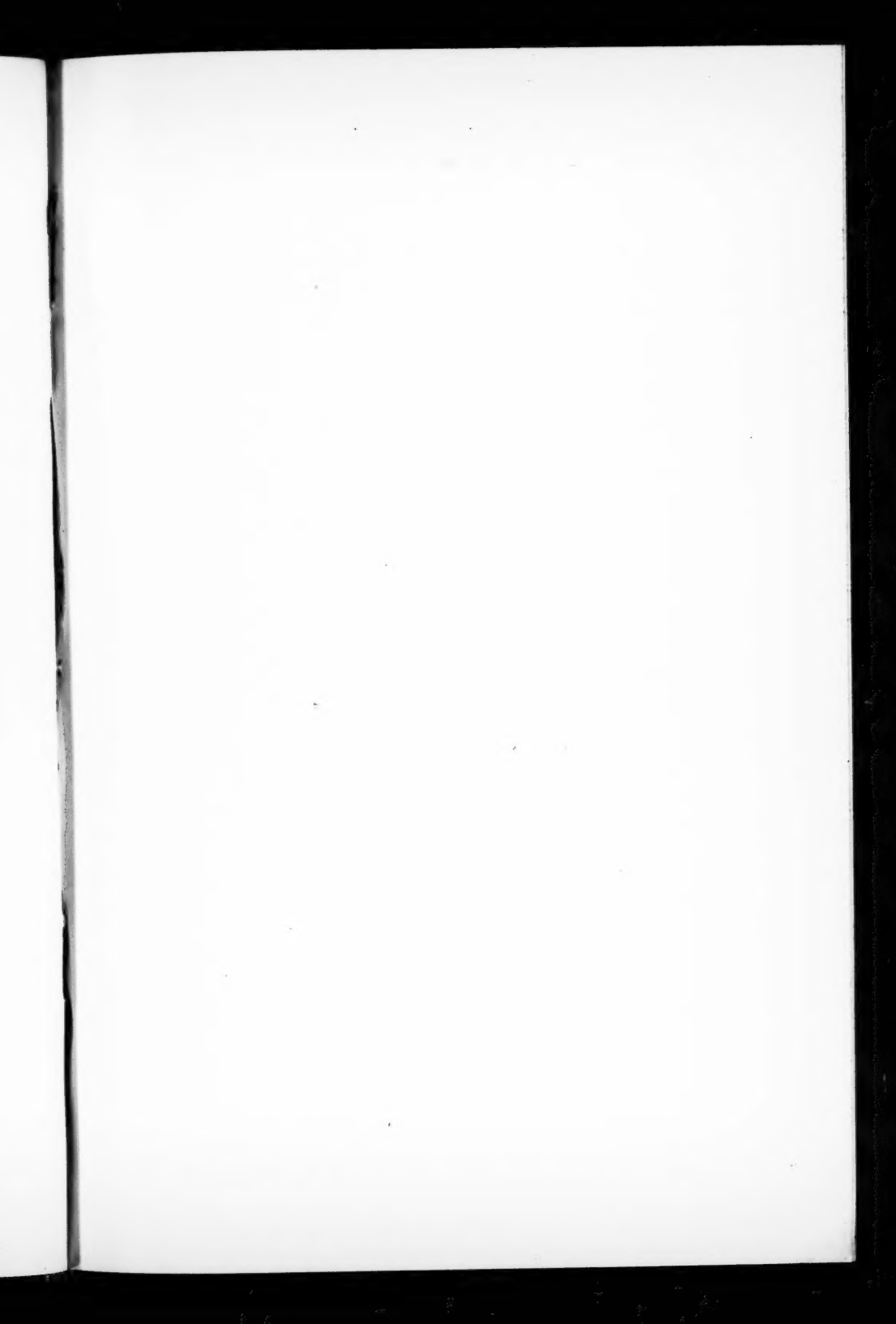
and the change which is taking place in forcing on them the forms of civilized existence, will be an extensive feature of the performance."

Mr. Ricker will be very grateful to army officers that will communicate with him (Chadron, Nebraska) with a view to furnishing any information they care to regarding events of the time covered in the above work. We should help such work as this upon which Judge Ricker is engaged.

**Letters on
Applied
Tactics.**

The Franklin Hudson Publishing Company, of Kansas City, Missouri, has just issued one of the most important books for the use of army officers that has been printed. It is a new translation by Major Chas. H. Barth, Twelfth Infantry, of the Baron Von Griepenkerl's "Letters on Applied Tactics," in which Major Barth has introduced the United States organization, together with the English scale of miles and yards. This book contains a large number of problems on field maneuvers, together with discussion of same, and will henceforth be used by student officers in the Fort Leavenworth Service Schools in place of the English translation used heretofore.

The new book costs \$2.00, and may be obtained from the Secretary of the United States Army Staff College, Fort Leavenworth, Kansas.





for

BRIGADIER GENERAL WINFIELD S. EDGERLY,
UNITED STATES ARMY.

